Vol. 1008 Number 4

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PATENTS

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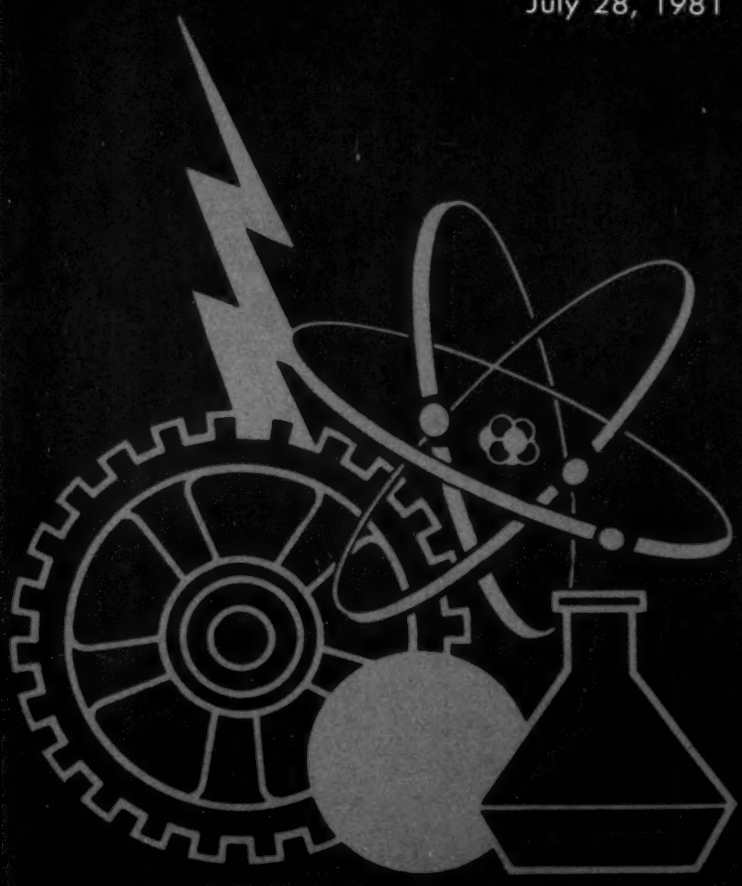

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90-95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

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International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

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Assistant Commissioner for Patents.

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The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before August 28, 1981:

LUTRELLE F. PARKER,
June 24, 1981. *Chairman, Committee on Enrollment.*

A

Abate, Joseph P., 1128 62nd St., Brooklyn, N.Y. 11219
Abbruzzese, Salvatore J., 290 River Rd., #P-5, Piscataway, N.J. 08854
Abdallah, Iman 'al-Amin, 7900 N. Stadium Dr., #127, Houston, Tex. 77030
Anderson, Denton L., 309 E. 237th St., Carson, Calif. 90745
Anderson, Edward B., 9490 S.W. 69th Ave., Tigard, Ore. 97223
Anderson, Roy L., 2212 Eye St., N.W., #603, Washington, D.C. 20037

B

Ballantyne, Richard L., 6 Fieldstone Ct., N. Andover, Mass. 01845
Bedell, Daniel J., 8509 SW. 45th, Portland, Ore. 97219
Bennett, Dale E., 801 N. Mountain View Pl., Fullerton, Calif. 92631
Benson, Tracey G., 5931 Walnut St., Pittsburgh, Pa. 15232
Berchoff, Paul H., 919 S. Division, #305, Ann Arbor, Mich. 48104
Biela, Joseph A., Apt. K-1, Fox Valley W., Glen Mills, Pa. 19342
Biggs, Suzanne L., 2940 N. Veraugo Rd., #22, Glendale, Calif. 91208
Blatt, Jeffrey J., 5028 Centerwood St., Lake Oswego, Ore. 97034
Blocker, Edward M., 5800 Quantrell Ave., #403, Alexandria, Va. 22312
Breh, Donald J., 18713 Tanterra Way, Brookeville, Md. 20729

C

Cannon, Richard K., 13250 Emily, #902, Dallas, Tex. 75240
Canzoneri, Al A., 15912 Silvergrove Dr., Whittier, Calif. 90604
Caruso, Charles M., 95 Lane Ave., W. Caldwell, N.J. 07006
Clark, Paul T., 70 Huron Ave., Cambridge, Mass. 02138
Clifford, John A., 711 N. 92nd Ct., #312, Omaha, Nebr. 68114
Clingan, James L., Jr., 12519 Lamplight Village Ave., Austin, Tex. 78751
Cone, John M., 8511 Chadbourne Rd., Dallas, Tex. 75209
Conrad, Timothy R., 2757 N. Summitt Ave., Milwaukee, Wis. 53211
Coombs, Renate A., 106 Coleman Ave., Chatham, N.J. 07928
Craft, Elbert D., 17311 Almelo La., Huntington Beach, Calif. 92649
Craig, Norman L., 4537 Valley View, Ashland, Ky. 41101
Cronmiller, Rae E., 6809 Perry Penny Dr., Annandale, Va. 22003

D

Darrow, Christopher, 6547 W. 85th Pl., Los Angeles, Calif. 90045
Davidson, Bryan H., 3435B S. Stafford St., Arlington, Va. 22206
Day, Jack E., 4075 SW. Charming Way, Portland, Ore. 97225
Demeter, John C., 13438 Wesley, Southgate, Mich. 48195
DeNuzzo, Jane B., 4335 Woodstock Rd., Santa Ynez, Calif. 93460
DesRosier, Thomas J., 10 Colony Blvd., #538, Wilmington, Del. 19802
DeVries, Vern G., 425 Fairview St., Ridgewood, N.J. 07450
Dickneiser, William E., 40 Wing La., Wantagh, N.Y. 11793
Doigan, Lloyd D., 2318 Huntridge Dr., Clifton Park, N.Y. 12065
Dudek, Jean Marie, 7824 Cortland, Elmwood Park, Ill. 60635
Duffy, Wayne E., 555 S. Argyle, #214, Fresno, Calif. 93727

E

Elder, Richard A., 205 Carnegie Pl., Pittsburgh, Pa. 15208

F

Fanucci, Allan A., 360 Livingston St., Norwood, N.J. 07648
Feldsted, John F., 252 S. Mentor Ave., #9, Pasadena, Calif. 91106
Finder, James A., 380 Riverside Dr., New York, N.Y. 10025
Fishman, Irving M., 88-03 32nd Ave., Jackson Hgts., N.Y. 11369
Fitts, Edward P., 82 Pierrepont St., Brooklyn, N.Y. 11201
Frankel, William H., 2740 N. Pine Grove Ave., #7E, Chicago, Ill. 60614
French, Timothy A., 96 Main Blvd., Shrewsbury, Mass. 01545

G

George, Kenneth P., 111 Columbia Hgts., Brooklyn, N.Y. 11201
Glenn, Michael A., E. 3137A 29th Ave., Spokane, Wash. 99203
Greenberg, Barbara, 142 Linden St., Elmhurst, Ill. 60126

H

Halamka, John E., 30005 Via Borica, Palos Verdes Estates, Calif. 90274
Hammer, Ira J., 21 Maxine Dr., Morristown, N.J. 07960
Handy, Robert M., 4950 E. Palomino Rd., Phoenix, Ariz. 95018
Hansell, R. Stephen, Beechbank, 1205 W. 64th St., Indianapolis, Ind. 46260
Hayhurst, Paul D. 517 W. Meadowbrook, Midland, Mich. 49640
Heller, Stephen B., 1407 W. Summerdale, Chicago, Ill. 60640
Hendricks, Bruce J., 354 E. Kossuth, Columbus, Ohio 43206
Henig, Shabtay S., 1590 Anderson Ave., #28, Fort Lee, N.J. 07024
Heyd, William E., 8152 Brookwood Dr., Kalamazoo, Mich. 49002
Highet, David W., 6 Monroe St., Concord, N.H. 03301
Hite, James E., III, 3444 Greer Rd., Palo Alto, Calif. 94303
Hochstetler, Janet K., 14 Meadows La., Wilmington, Del. 19809
Hodur, Philip E., 14 Bruce Dr., #4, Florissant, Mo. 63031
Hoffman, Michael P., 1704 Lamont St., N.W., Washington, D.C. 20010
Hosmer, James T., 842 New Hamp. Ave., N.W., Washington, D.C. 20037

J

Johnson, Kenneth C., 157 Cherokee St., Miami Springs Fla. 33160
Jorgensen, Adam A., 1911 NW. 36th St., Oakland Park, Fla. 33309
Juettner, Paul G., 1460 N. Sandburg Terr., Apt. #2308, Chicago, Ill. 60610

K

Kato, Koichiro, 182 Penn Lear Dr., Monroeville, Pa. 19146
Kennard, Wayne M., 2504 Bishop La., Antioch, Calif. 94509
King, Robert L., 10005 Oak Run, Austin, Tex. 78758
Kirkland, Thomas E., 1107 Colony North Dr., Austin, Tex. 78758
Kjeldgaard, Richard H., 4841 Willett Pkwy., Chevy Chase, Md. 20015
Klepinski, Robert J., 3120 James Ave., S. Minneapolis, Minn. 55408
Klitzke, Ramon A., II, 6320 SW. Lombard, #45, Beaverton, Ore. 97005
Koegler, Claire A., 620 Arden La., Pittsburgh, Pa. 15243
Kovach, Dennis E., 5236 N. 55th, Arlington, Va. 22203
Kulp, Richard A., 6861 S. Clayton Way, Littleton, Colo. 80122
Kundrat, Douglas A., 2655 Mapleton Ave., #202, Boulder, Colo. 80302
Kushin, Jeffrey F., 36 Overbrook Dr., E. Hartford, Conn. 06118

L

LaForge, Raymond A., 9778 Hillsmere Rd., Ellicott City, Md. 21043
Lanyi, William D., 107 Henry Hudson Dr., Delmont, Pa. 15626
Larson, David C., R.R. 9242, Spirit Lake, Iowa 51360
Larson, Jacqueline S., 442 College Ave., Palo Alto, Calif. 94306
Lentz, Edward T., 29 Erna Ct., Upper Darby, Pa. 19082
Lev, Robert G., 3120 Naamans Rd., Apt. N-8 Stratford Apts., Wilmington, Del. 19810
Levstik, Timothy E., 1108 Briergate Dr., Naperville, Ill. 60540
Lin, Fong S., 225 St. Pauls Ave., Jersey City, N.J. 07306
Linden, Gerald E., 2 White St., Concord, N.H. 03301
Lindsay, Ronald T., 144 Scofield Rd., Charlotte, N.C. 28209
Linn, Terrence J., 2115 F. St., N.W., #404, Washington, D.C. 20037
Loshin, Andrea L., 5 Fernwood Rd., White Plains, N.Y. 10605
Lundell, Craig M., 975 Taylor, Ogden, Utah 84404

M

Macevicz, Stephen C., 691 S. M St., Livermore, Calif. 94550
MacKinnon, James D., 360 Beelzebub Rd., S. Windsor, Conn. 06074
Macklin, Michael E., 12118 Beauregard, Houston, Tex. 77056
Maginnis, Christopher L., 30 Deacon Dr., Mercerville, N.J. 08619
Markl, Steven R., 13 Morningside Ave., W. Chicago, Ill. 60606
Marshall, Jeffrey D., 21 Central, Topsfield, Mass. 01983
Martin, Terrence, 1170 Cypress Log Pl., Austell, Ga. 30001
Marton, Brian J., 4302 N. 16th St., Arlington, Va. 22207
Mattingly, John R., 636 Houston Ave., #207, Takoma Park, Md. 20012
May, John J., 1398 Flicker Way, Sunnyvale, Calif. 94087
McCracken, William E., 332 Hillside, Elmhurst, Ill. 60125
McGlew, Hilda, Box 823, East Lake Rd., Tuxedo, N.Y. 10987
McGonagle, John P., 14 French St., Hingham, Mass. 02043
McKee, Michael E., 64 Highland St., West Hartford, Conn. 06119
McMurray, Walter J., 23 Windward La., Madison, Conn. 06443
McVeigh, John J., 106 Ave. P., Brooklyn, N.Y. 11204
Meador, Terrance A., 4395 Ampudia St., San Diego, Calif. 92103
Merris, John D., 2324 Seyene Way, Boise, Idaho 83702
Molnar, Gary R., 22 N. Spring St., Concord, N.H. 03301
Morgan, Robert C., 50 Merriam Ave., Bronxville, N.Y. 10708
Morse, Jonathan W., 2215 Eastlawn, #7, Midland, Mich. 49640
Mueller, Douglas P., 3102 S. High St., Arlington, Va. 22202
Muetterties, J. Henry, 1765 Coliseum St., #210, New Orleans, La. 70130
Murphy, Loyal W., III, 270 S. Mendenhall, Memphis, Tenn. 38117
Murray, William E., 3276 S. Hudson, #92, Tulsa, Okla. 74135
Mustian, William R., Jr., 838 Wilshire Blvd., Metairie, La. 70005

N

Nieman, William H., 191 Calle Isabel, San Marcus, Calif. 92069
Novick, Mitchell P., 22 Haller Rd., W. Orange, N.J. 07052
Nydegger, Neil K., 2079 Hopewood Dr., Falls Church, Va. 22043
Nyquist, Irene M., 3707 Westbrier Terr., Midland, Mich. 48640

O

Olsen, David, 2920 Gulf Dr., Orlando, Fla. 32806
Olson, Arne M., 407 N. Ellsworth, Valla Park, Ill. 60181
O'Neill, Herbert E., 11410 Pineknoll, Houston, Tex. 77099
Orsund, Allan P., 1118 Woodland Dr., Newton, Iowa 50208
Otto, Richard J., Jr., 144 Santa Ana Ave., Long Beach, Calif. 90803

P

Pace, Salvatore, P., 16573 S. White Oaks, Strongsville, Ohio 44136
Park, Barbara J., 374 Midway Rd., Pittsburgh, Pa. 15216
Parkinson, Martin C., 6 N. Delaware Dr., Nyack, N.Y. 10960
Parnass, Paul D., 195 1/2 E. Side Dr., Concord, N.H. 03301
Pauly, Joan H., 4221 Dayton Ave., N., Seattle, Wash. 98103
Pearson, Sally L., 31-10 Briarwood La., Marlboro, Mass. 01752
Pezdek, John V., 159 Ulysses St., Pittsburgh, Pa. 15211
Pink, Paul C., 2449 Dale Ave., Columbus, Ohio 43209
Pojunas, Leonard W., Jr., 2000 S. Eads St., #523, Arlington, Va. 22202
Polansky, Seymour, 72 Florence Rd., Riverside, Conn. 06878
Poulos, Nicholas A., 1729 Forest Cove Dr., #207, Mt. Prospect, Ill. 60056
Prescott, Charles J., P.O. Box 330531, Miami, Fla. 33133
Priest, Peter H., 65 Downing St., #2B, New York, N.Y. 10014
Pruitt, Tom F., 1177 S. Second St., Waco, Tex. 76703

R

Reiss, Seth M., 1835 Makiki St., Honolulu, Hawaii 96822
Richards, Gerald T., P.O. Box 728, Diablo, Calif. 94528
Robinson, Raymond L., 21 Edgewater Dr., #8, Coral Gables, Fla. 33134
Rohrbach, William, 57 Waughaw Rd., Towaco, N.J. 07082
Rosenberg, Gerald, 2901 S. Sepulveda Blvd., #331, Los Angeles, Calif. 90064
Rutkowski, Renee S., 624 S. Lee St., Alexandria, Va. 22314

S

Sales, Michael W., 5106 Sunrise Trail, N.W., Huntsville, Ala. 35810
Sawicki, Zbigniew P., 106 E. Golden Lake La., Circle Pines, Minn. 55014
Schiffer, Michael C., 31 Plymouth House, 631 Talcottville Rd., Vernon, Conn. 06066
Schultz, Leland D., 11614 Brookledge, Houston, Tex. 77099
Scott, Earl L., 2025 Broadway, New York, N.Y. 10023
Seabury, Charles W., 550 Forest Rd., Scotch Plains, N.J. 07076
Seligson, Raymond C., 43 Sherman St., Hartford, Conn. 06105
Seltzer, George S., 1860 NE. 142nd St., #80, North Miami, Fla. 33181
Seman, Robert J., 1 Frank Ave., South Amboy, N.J. 08879
Shaffer, Thomas R., 341 S. Aiken Ave., Pittsburgh, Pa. 15232
Sheets, Eric J., 240-01 43 Ave., Douglaston, N.Y. 11363
Shurupoff, Lawrence J., 3440 Terrace Ct., #914, Alexandria, Va. 22302
Skala, Stephen F., 3839 S. Wenonah Ave., Berwyn, Ill. 60402
Smith, Joseph H., 743 E. Meadow Dr., Palo Alto, Calif. 94303
Smith, Mark A., Halcyon, R.D. 1, Box 29F, Valley View, Tex. 76272
Smith, Michael C., 522 Lincoln St., LaGrange, Ga. 30240
Smith, Thomas M., 1201 Stonebridge, #12, Portage, Mich. 49081
Smith, William M., 3731 Arbolada Rd., Los Angeles, Calif. 90027
Sonntag, James L., 345 E. 93rd St., #25D, New York, N.Y. 10017
Speer, Gary D., 2802 Ellendale Pl., Los Angeles, Calif. 90007
Stadnicki, Alfred A., 12 Christina St., Littleton, Mass. 01460
St. Julian, Horace, 8050 Pantano Pl., Alexandria, Va. 22309
Stockman, Mark W., 4805 McKinney Ave., #201, Dallas, Tex. 75205
Svensson, Leonard R., 1114 Shamon Pl., Herndon, Va. 22070

T

Taylor, James B., 3545 Mutimer Dr., Augusta, Ga. 30906
Tower, Lee William, 19 Saddle Rd., Rancho Palos Verdes, Calif. 90274

U

Udseth, William T., 701 NW. Chapel Dr., Ankeny, Iowa 50021
Uretsky, Jack L., 206 N. Grant, Hinsdale, Ill. 60521

V

Valenta, Frank L. Jr., Rte. 4, Box 161, Chapin, S.C. 29036

W

Weber, Anton B., 247 Midland Ave., Montclair, N.J. 07042
Welch, Gerald T., 19035 Candleview Dr., Spring, Tex. 77373
Werner, Mary C., 0-155 Blue Hill Ave., Fair Lawn, N.J. 07410
White, Jack W., 254 White Tree Lane, Ballwin, Mo. 63011
Wilcox, James L., 107 E. Oak St., Bowling Green, Ohio 43402
Wilcox, Merrill, 2911 NW. 30th Terr., Gainesville, Fla. 32605
Williams, Ronald C., 9200 Higham Rd., Lorton, Va. 22079
Woloch, Anthony N., 5911 N. Cedarcrest Ct., #707, Peoria, Ill. 61615

Y

Yankwich, Leon R., 254 W. 98th St., #6C, New York, N.Y. 10025

Z

Zelson, Steve T., 165 E. 35th St., #156, New York, N.Y. 10016
Ziemba, Mark V., 573 Grand St., New York, N.Y. 10002
Zunchuk, Alexander, 2000 Van Aken, #12, Shaker Hgts., Ohio 44122

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 254,757, Re. S.N. 248,523, Filed Mar. 27, 1981, Cl. D. 2/400, TOOL BELT, Harvey R. Rodstein, Owner of

Record: *Action Leathercraft, Inc., Commerce, Calif.,* Attorney or Agent: Paul D. Supnik, Ex. Gp.: 290

Re. 27,447, Re. S.N. 068,778, Filed Aug. 22, 1979, Cl. 29/527.7, PROCESS OF USING A LOW CARBON STEEL COMPOSITION IN A CONTINUOUS, John H. Richards, Owner of Record: *United States Steel Corp., Pittsburgh, Pa.,* Attorney or Agent: Arthur J. Greif, Ex. Gp.: 321

3,297,155, Re. S.N. 253,160, Filed Apr. 10, 1981, Cl. 242/68, TUBULAR CORES, Miles N. Gattenby, Jr., et al., Owner of Record: *Borden, Inc., New York, N.Y.,* Attorney or Agent: Robert L. Rohrback, et al., Ex. Gp.: 242

3,526,220, Re. S.N. 230,320, Filed Feb. 2, 1981, Cl. 128/25, FOOT EXERCISER, Samuel N. Small, et al., Owner of Record: *World Marketing Corp., Central Islip, N.Y.,* Attorney or Agent: Sidney G. Faber, et al., Ex. Gp.: 334

3,746,608, Re. S.N. 255,707, Filed Apr. 20, 1981, Cl. 428/169, SHAPED ARTICLE OF SYNTHETIC RESIN HAVING MECHANICALLY DISORDERED ORIENTATION, Mitsuhiro Takahashi, Owner of Record: *Weld-Loc Systems, Inc., Alliance, Ohio,* Attorney or Agent: Melvin M. Goldenberg, et al., Ex. Gp.: 164

3,764,527, Re. S.N. 254,757, Filed Apr. 16, 1981, Cl. 210/30, METHOD FOR SEPARATING OIL FROM WATER, William E. Sohl, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Cruzan Alexander, et al., Ex. Gp.: 176

3,875,316, Re. S.N. 165,098, Filed July 1, 1980, Cl. 426/600, PREPARATION OF ISOMERIZED HOP EXTRACTS, Anthony M. Humphrey, Owner of Record: *Bush Boake Allen Ltd., Walthamstow, England,* Attorney or Agent: Herbert Goodman, Ex. Gp.: 172

3,902,391, Re. S.N. 206,037, Filed Mar. 9, 1981, Cl. 83/788, BAND SAW APPARATUS AND DRIVE ASSEMBLY THEREFOR, Harold Urquhart Bond, Owner of Record: *Hawker Siddeley Canada Ltd., Toronto, Ontario, Canada,* Attorney or Agent: John B. Young, et al., Ex. Gp.: 323

3,913,709, Re. S.N. 209,233, Filed Nov. 19, 1980, Cl. 188/73.4, SPOT-TYPE DISC BRAKE, Jochen Burgdorf, et al., Owner of Record: *ITT Industries, Inc., New York, N.Y.,* Attorney or Agent: Walter J. Baum, et al., Ex. Gp.: 315

3,933,781, Re. S.N. 146,740, Filed May 5, 1980, Cl. 260/112.5R, PROCESS FOR THE PREPARATION OF ALPHA-L-ASPARTYL-L-PHENYLALANINE ALKYL ESTERS, Gerald L. Bachman, et al., Owner of Record: *Monsanto Co., St. Louis, Mo.,* Attorney or Agent: R. E. Wexler, et al., Ex. Gp.: 125

3,935,074, Re. S.N. 251,033, Filed Apr. 3, 1981, Cl. 435/293, ANTIBODY STERIC HINDRANCE IMMUNOASSAY WITH TWO ANTIBODIES, Kenneth Edward Rubenstein, et al., Owner of Record: *Syva Co., Palo Alto, Calif.,* Attorney or Agent: Bertram I. Rowland, Ex. Gp.: 176

3,953,335, Re. S.N. 200,590, Filed Oct. 24, 1980, Cl. 252/8.5A, MAGNESIA STABILIZED ADDITIVES FOR NON-CLAY WELLBORE FLUIDS, Jack M. Jackson, Owner of Record: *Brinadd Co., Houston, Tex.,* Attorney or Agent: Kenneth H. Johnson, Ex. Gp.: 223

3,977,727 Re. S.N. 092,016, Filed Nov. 7, 1979, Cl. 301/97, RIM WITH BEAD UNSEAT RESTRAINT, William A. Glasenapp, et al., Owner of Record: *B. F. Goodrich Co., New York, N.Y.,* Attorney or Agent: Harry F. Pepper, Jr., et al., Ex. Gp.: 311

4,057,882, Re. S.N. 094,630, Filed Nov. 15, 1979, Cl. 291/283.5, APPARATUS FOR COMPRESSING SLEEVES ONTO STRUCTURAL RODS, Geoffrey M. Bowmer, Owner of Record: *Zeitgeist A.G., Zug, Switzerland,* Attorney or Agent: A. D. Caesar, et al., Ex. Gp.: 323

4,093,405, Re. S.N. 246,654, Filed May 7, 1981, Cl. 417/343, FUEL-OPERATED DEVICE, William S. Brian, Owner of Record: *Inventor,* Attorney or Agent: Jerome Bauer, et al., Ex. Gp.: 343

4,141,051, Re. S.N. 255,407, Filed Apr. 20, 1981, Cl. 360/113, VARIABLE DYNAMIC RANGE MAGNETO-RESISTIVE HEAD, Karel E. Kuijk, et al., Owner of Record: *U.S. Philips Corp., New York, N.Y.,* Attorney or Agent: Thomas A. Briody, Ex. Gp.: 235

4,148,609, Re. S.N. 252,219, Filed Apr. 8, 1981, Cl. 23/230B, METHOD FOR MEASURING ANTI-STREPTOLYSIN CONCENTRATION IN BLOOD, Antonio Ricci, Owner of Record: *Istituto Sieroterapico & Vaccinogeno Toscano, Sclavo S. P. A., Siena, Italy,* Attorney or Agent: George B. Finnegan, et al., Ex. Gp.: 177

4,148,932, Re. S.N. 250,095, Filed Apr. 1, 1981, Cl. 427/31, ATOMIZATION IN ELECTROSTATIC COATING, Yoshinori Tada, et al., Owner of Record: *Ransburg, Japan, Ltd., Tokyo, Japan,* Attorney or Agent: Clyde F. Willian, et al., Ex. Gp.: 162

4,178,077, Re. S.N. 260,525, Filed May 4, 1981, Cl. 350/486, ELECTROSTATICALLY CONTROLLED PICTURE DISPLAY DEVICE, Ties S. Te Velde, Owner of Record: *U.S. Philips Corp., New York, N.Y.,* Attorney or Agent: Thomas A. Briody, Ex. Gp.: 257

4,179,226, Re. S.N. 253,784, Filed Apr. 13, 1981, Cl. 404/64, ELASTOMERIC EXPANSION SEAL, Guy S. Puccio, Owner of Record: *Acme Highway Products Corp., Buffalo, N.Y.,* Attorney or Agent: Conrad Christel, et al., Ex. Gp.: 354

4,190,707, Re. S.N. 224,846, Filed Jan. 13, 1981, Cl. 429/254, ALKALINE BATTERY SEPARATOR, Yoshinao Doi, et al., Owner of Record: *Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 114

4,204,645, Re. S.N. 248,722, Filed Mar. 30, 1981, Cl. 239/341, GENERAL PURPOSE COMPRESSION-TYPE SPRAYER, Leo A. Hopp, Owner of Record: *Column, Inc., Van Nuys, Calif.,* Attorney or Agent: Robert Louis Finkel, Ex. Gp.: 313

4,213,698, Re. S.N. 259,596, Filed May 1, 1981, Cl. 355/77, APPARATUS AND METHOD FOR HOLDING AND PLANARIZING THIN WORKPIECES, Victor A. Firtion, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 211

4,229,144, Re. S.N. 226,574, Filed Jan. 19, 1981, Cl. 417/222, FEEDBACK SHAFT EXTENDING BETWEEN SWASHPLATE AND DISPLACEMENT CONTROL VALVE, John J. Kass, et al., Owner of Record: *Deere & Co., Moline, Ill.,* Attorney or Agent: H. Vincent Harsha, et al., Ex. Gp.: 343

4,231,616, Re. S.N. 259,805, Filed May 4, 1981, Cl. 297/481, COMBINED SHOULDER HARNESS AND LAP BELT RESTRAINT APPARATUS HAVING SINGLE FASTEN/RELEASE POINT AT LAP BUCKLE, Mark C. Painter, Owner of Record: *The Boeing Co., Seattle, Wash.,* Attorney or Agent: Orland M. Christensen, et al., Ex. Gp.: 355

4,235,888, Re. S.N. 260,853, Filed May 6, 1981, Cl. 424/180, PSEUDOTRISSACCHARIDES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS MEDICAMENTS, Peter Stadler, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 125

4,240,405, Re. S.N. 260,318, Filed May 4, 1981, Cl. 426/433, SOLAR WATER HEATER, Roger F. French, Owner of Record: *Inventor,* Attorney or Agent: W. R. Hulbert, Ex. Gp.: 345

4,243,863, Re. S.N. 260,306, Filed May 4, 1981, Cl. 219/69V, ELECTRICAL DISCHARGE MACHINING APPARATUS WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES, George Wyss, Owner of Record: *Ateliers Des Charmilles, S. A., Geneva, Switzerland,* Attorney or Agent: Claude A. Patalidis, et al., Ex. Gp.: 213

4,248,753, Re. S.N. 247,584, Filed Mar. 26, 1981, Cl. 260/29.2TN, MICHAEL ADDUCTS OF POLYMERIC MATERIALS USEFUL IN COATING APPLICATIONS, Stephen L. Buchwalter, et al., Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: William J. Uhl, et al., Ex. Gp.: 142

PATENT NOTICES

Certificates of Correction for the Week of July 28, 1981

Re. 29,660	4,232,380	4,256,924	4,264,389
Re. 30,607	4,233,619	4,257,087	4,264,508
3,586,891	4,235,294	4,258,061	4,264,523
3,974,146	4,235,607	4,259,067	4,264,524
3,992,382	4,236,307	4,259,183	4,264,596
4,004,196	4,237,071	4,259,535	4,264,850
4,007,086	4,239,306	4,259,570	4,264,947
4,042,794	4,240,539	4,259,725	4,264,966
4,062,451	4,240,941	4,260,192	4,265,285
4,067,991	4,241,509	4,260,324	4,265,306
4,112,213	4,244,233	4,260,718	4,265,636
4,124,337	4,244,286	4,260,737	4,265,820
4,138,196	4,244,475	4,260,785	4,266,124
4,145,414	4,244,748	4,260,787	4,266,313
4,163,928	4,245,066	4,260,790	4,266,323
4,165,139	4,245,130	4,260,792	4,266,391
4,166,918	4,247,908	4,260,795	4,266,555
4,172,889	4,248,112	4,260,819	4,266,657
4,175,585	4,248,339	4,261,013	4,266,672
4,182,702	4,248,394	4,261,142	4,266,692
4,187,589	4,248,730	4,261,165	4,266,728
4,188,386	4,249,907	4,262,097	4,266,969
4,190,679	4,249,974	4,262,530	4,267,119
4,196,213	4,250,521	4,262,536	4,267,153
4,210,404	4,252,019	4,262,854	4,267,206
4,210,961	4,252,568	4,263,010	4,267,395
4,213,803	4,253,482	4,263,222	4,267,501
4,214,230	4,253,564	4,263,242	4,267,679
4,221,176	4,254,421	4,263,341	4,267,699
4,223,119	4,254,836	4,263,445	4,267,892
4,223,680	4,254,872	4,263,624	4,268,040
4,224,693	4,255,287	4,263,660	4,268,525
4,225,580	4,256,002	4,263,687	4,268,700
4,226,300	4,256,011	4,263,786	4,268,802
4,226,852	4,256,517	4,263,805	4,268,936
4,228,744	4,256,623	4,264,211	4,269,828

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 30, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-13-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	2-15-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-28-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-28-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-17-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-07-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	8-02-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-29-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	10-16-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,131,397 to 3,134,980, inclusive

Plant Patents ..... Numbers 2,399 to 2,406, inclusive

REISSUES

JULY 28, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,688

EXTRUSION PRESS FOR INDIRECT EXTRUSION

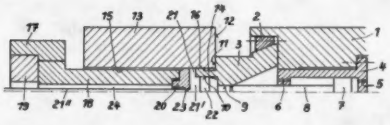
Franz J. Zilges, Monchen-Gladbach, and Klaus Siegert, Berlin, both of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Original No. 4,052,877, dated Oct. 11, 1977, Ser. No. 660,936, Feb. 24, 1976. Application for reissue Nov. 24, 1978, Ser. No. 963,438

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1975, 2509490

Int. Cl.[3] **B21C** *23/02, 35/04, 35/06*

U.S. Cl. 72—273.5 **4 Claims**



1. An extrusion press for indirect extrusion comprising

a counter platen

a cylinder cross-head

tie-rods connecting the counter platen and cylinder cross-head

a moving cross-head

a ram mounted on the cylinder cross-head for moving the moving cross-head

a hollow stem mounted on the counter platen and extending towards the moving cross-head

an extrusion die at the end of the hollow stem

a billet container between the moving cross-head and the counter platen, which has a billet-receiving bore and which can be moved by the moving cross-head over the die and hollow stem to perform an extrusion operation

a sealing plate for sealing one end of the said bore

a hollow cylindrical portion provided on the sealing plate for projecting into said bore, and defining a cylindrical recess with an aperture at the bottom thereof

a dummy block to be received in said cylindrical recess, *said recess being sufficiently large to receive, in addition to the dummy block, a portion of an extrusion butt-end formed in the extrusion process,* and

a piston arranged in said aperture, and actuable to push the dummy block out of the recess.

Re. 30,689

FOLDABLE BENCH FOR A PORTABLE HAND-HELD CIRCULAR SAW

Edward L. Gray, Rte. 7, Gray Bluff Trail, Chapel Hill, N.C. 25714, and Bruce E. Browning, Jr., P.O. Box 56, Carrboro, N.C. 27510

Original No. 4,068,550, dated Jan. 17, 1978, Ser. No. 723,475, Sep. 14, 1976. Application for reissue Jan. 17, 1980, Ser. No. 113,033

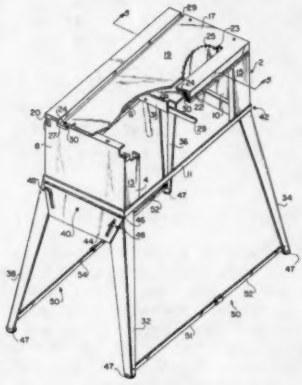
Int. Cl.[3] **B27B** *5/18*

U.S. Cl. 83—471.2 **21 Claims**

1. A foldable bench for converting a normally hand held electrically [power] *powered* circular saw having a base plate into a table saw, comprising

a. housing means for supporting a normally hand held electrically powered circular saw, said housing means including an upper surface for supporting material in a position to be cut by a normally hand held, electrically powered circular saw supported by said housing means, said housing means generally defining a parallelopiped having a first and second pair of opposed side walls, said first pair of opposed side walls having a greater horizontal dimension *than said second pair of opposed side walls;*

b. retractable support means for supporting said housing means in a position above a floor level such that the said upper surface is easily accessible by an operator, said retractable supporting means including a plurality of foldable leg members having floor engaging extremities movable from a first position wherein said foldable leg members are contained entirely within said housing means to [the] *a* second position wherein said floor engaging extremities are positioned laterally beyond the lateral extremities of said upper surface; and



c. stabilizer means for engaging the upper extremity of each leg member when in said second position in order to resist further outward lateral movement, said stabilizer means including four [clips] *fastening means* rigidly connected adjacent each of the lower lateral edges of said first opposed side walls *for releasibly holding said leg members in said second position,* whereby said foldable bench may be extremely compact when said foldable leg members are in said first position and extremely stable when said foldable leg members are in said second position.

Re. 30,690

SEAL

Carlos R. Canalizo, Dallas County, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Original No. 4,109,716, dated Aug. 29, 1978, Ser. No. 769,263, Feb. 16, 1977. Continuation of Ser. No. 597,962, Jul. 21, 1975, abandoned. Application for reissue Apr. 17, 1980, Ser. No. 141,069

Int. Cl.[3] **E21B** *33/12*

U.S. Cl. 166—191 **6 Claims**

1. Apparatus comprising:

[(a) a nipple having an interior cylindrical surface;]

[(b)] a well tool having an exterior cylindrical surface and adapted to be run in a well and adapted to be landed and sealed in [said] *a* nipple, *having an interior cylindrical surface,* so that fluid flow in the annulus between said interior cylindrical surface and said exterior cylindrical surface is blocked at the sealing location; and

[(c)] at least one annular sealing system comprising:

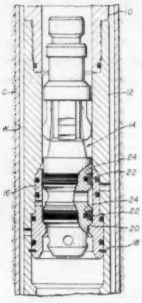
(i) said exterior cylindrical surface having an annular recess located at the site where it is desired to block the fluid flow, and said exterior cylindrical surface being

located so that it is exposed to flowing well fluids during the running of said well tool in a well, and

(ii) an annular sealing unit associated with said recess and including a portion which is exposed to flowing well fluids when said well tool is being run in a well and including

(A) ring support means received entirely within said recess,

(B) annular deformable sealing means secured to said ring support means and having a portion received within said recess and a portion projecting from said



recess for sealing with said interior cylindrical surface,

(C) said sealing means including a pair of spaced sealing members with each sealing member having an outer convex curved sealing face projecting from said recess and with said sealing means being contoured to provide a space between the sealing faces into which the sealing members may flow when deformed and with each sealing member sized so that said portion projecting from said recess provides an interference fit with said interior cylindrical surface when said well tool is landed in said nipple.

Re. 30,691

METHOD OF APPLYING A WEARING SURFACE

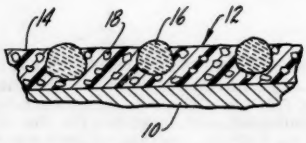
James R. Hallstrom, Brookfield; Raymond J. Hoffman, Fox Point, and Ronald L. Walling, Sussex, all of Wis.

Original No. 4,018,944, dated Apr. 19, 1977, Ser. No. 570,194, Apr. 21, 1975. Continuation of Ser. No. 414,874, Nov. 12, 1973, abandoned, which is a division of Ser. No. 238,183, Mar. 27, 1972, Pat. No. 3,876,579. Application for reissue Aug. 28, 1980, Ser. No. 182,031

Int. Cl.[3] **B32B** *35/00*; **B05D** *5/00*

U.S. Cl. 427—140 **7 Claims**

1. A method of making a surface substantially more wear resistant where the surface is subject to wear caused by impact, abrasion, erosion or corrosion, including the steps of supplying (a) an uncured curable crosslinkable thermosetting resin and (b) a curing agent for the resin, separately, in about a 2 to 1 ratio, and a thixotropic agent in an amount sufficient to prevent settling, intermixing independently in (a) and (b) both large abrasion resistant ceramic particles and much smaller coabrasion resistant filler particles of a hardness on the order of that of the material causing wear with the smaller particles dispersed in random fashion among the larger particles, mixing all the ingredients and applying the resultant mixture to the sur-



face subject to wear and allowing it to cure and firmly adhere to the surface.

Re. 30,692

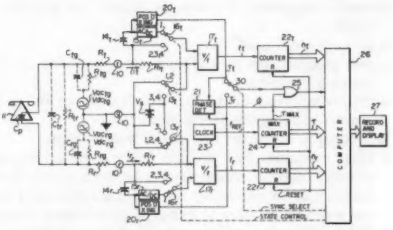
METHOD AND APPARATUS FOR MEASURING TELEPHONE LINE CHARACTERISTICS

John C. Ellson, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Original No. 4,186,282, dated Jan. 29, 1980, Ser. No. 945,246, Sep. 25, 1978. Application for reissue Mar. 24, 1980, Ser. No. 133,224

Int. Cl.[3] **H04B** *3/46*

U.S. Cl. 179—175.3 R **5 Claims**



1. A machine method of measuring the leakage resistances, the capacitances, and the spurious voltages on a telephone line comprising the steps of:

individually measuring and recording any spurious current flowing through individual reference resistors connected from each side of the line to ground;

individually measuring and recording the transient charge and the steady state current flowing through the individual reference resistors when connected in series with first sources of d-c voltage from each side of the line to ground;

individually measuring and recording the transient charge and the steady state current flowing through the individual reference resistors when connected in series with second sources of d-c voltage from each side of the line to ground, the second sources having a different voltage ratio than the first sources; and

calculating the leakage resistances, the capacitances and the spurious voltages between each side of the line and ground, and between the two sides of the line directly from the recorded measurements.

PLANT PATENTS

GRANTED JULY 28, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,754

MINIATURE ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 1, 1980, Ser. No. 145,771
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a velvety deep red color, being of a shade generally near Blood Red 820, or similar, the bud and flower resembling the variety Little Curt (miniature — not patented) in form and size; and further characterized by a plant of vigorous and compact upright growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium size glossy foliage and an abundance of flowers borne usually one to the stem.

4,755

MINIATURE ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 1, 1980, Ser. No. 145,782
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a rich blend of yellow, peach pink, orange and red, the bud and flower resembling the variety Circus (U.S. Plant Pat. No. 1,382, expired) in color and resembling the variety Over the Rainbow in form and size; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium size glossy foliage and an abundance of flowers borne usually singly on sturdy wirey stems.

PATENTS

GRANTED JUL. 28, 1981

ERRATA

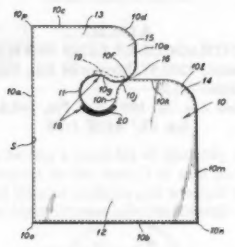
For CLASS	See PATENT NO.
434–030	4,280,285
411–542	4,280,390
411–015	4,280,391
294–141	4,280,643
369–233	4,280,705
156–073	4,280,805
260–513	4,281,177
369–139	4,281,225
260–112	4,281,233

PATENTS

GRANTED JULY 28, 1981

GENERAL AND MECHANICAL

4,280,227
CAPE PROTECTOR
Jean Brock, 411 Wilton St., Mariannа, Fla. 32446
Filed Nov. 23, 1979, Ser. No. 96,934
Int. Cl.³ A41D *3/08*; A41B *13/10*
U.S. Cl. 2—88 **19 Claims**



1. A protective cape garment comprising a generally rectangular sheet-form body member made of flexible water-impervious plastic material,

first and second full edges on said body member disposed at right angles to one another,

a third edge on said body spaced from and generally parallel to one of said first and second edges,

said third edge extending about one-half of the full edge dimension of said body member, whereupon said third edge changes into an inwardly curving transition edge which, in turn, merges into a first straight portion disposed to be in spaced parallel relation to the other of said first and second edges,

said first straight edge portion merging into a first reversely curved interior edging section and forming a generally circular recess larger than the average neck dimension of a human being, said circular recess merging consecutively through a second reversely curved interior edging section and into a second straight edge portion disposed in parallel spaced relation to said one of said first and second edge portions,

said second straight edge portion terminating in an outwardly curving transition edge which, in turn, merges with a fourth edge on said body portion,

said fourth edge on said body portion spaced from and generally parallel to the other of said first and second edges,

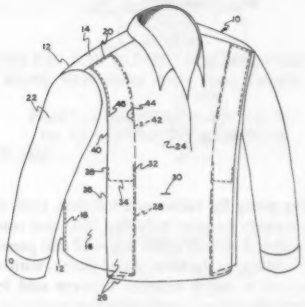
edging stitches on all of the edges of said body member to reinforce and finish the edges thereof,

and locking means on said reversely curved interior edging and on said circular recess to lock the cape garment around the neck of a person to be protected.

4,280,228
INFANT NURSING GARMENT
Donna J. Sulzmann, 1142 Ridge St., Crown Point, Ind. 46307
Filed Oct. 6, 1980, Ser. No. 194,056
Int. Cl.³ A41D *1/20*
U.S. Cl. 2—104 **18 Claims**

1. A nursing blouse comprising:

overlapping strips extending longitudinally between the arm portion and the breast portion; said strips being connected at their edges to each other forming spaced parallel seams; one of said seams being adjacent the breast portion and the other of said seams being adjacent said arm portion; said strips being connected between said spaced parallel seams forming a lateral seam thereacross; said spaced parallel seams extending upwardly from said lateral seam to the bottom of said breast portion and downwardly from the arm portion to the bottom of said arm portion providing an opening between said overlapping strips between said



upwardly and downwardly extending spaced parallel seams; and, said opening between said seams adjacent said breast portion being longitudinally shorter than said opening between said seams adjacent said arm portion.

4,280,229
MATERNITY CLOTHING GARMENT
Paul Stein, 24 Viewhill Rd., North Balwyn, Victoria, 3104, Australia
Filed Mar. 3, 1980, Ser. No. 126,961
Int. Cl.³ A41D *1/14*
U.S. Cl. 2—221 **7 Claims**

1. A maternity garment having a front and a back and including in combination,

a waist portion; and

a body portion integral with the waist portion and extending vertically downwardly from the waist portion;

the body portion having a configuration which forms the shape of the garment; and

the waist portion having a relatively vertically larger panel of elastically expansible and comformable ribbed knitted material extending circumferentially along the waist portion at the front of the garment, and a relatively vertically smaller panel of elastically expansible and comformable ribbed knitted material extending circumferentially along the waist portion at the rear of the garment;

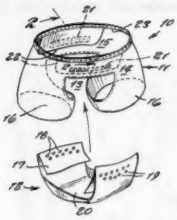
the larger panel extending vertically downwardly further than the smaller panel, whereby the waist portion will conform to the shape of the wearer over a range of shape and size variations.

4,280,230

DISPOSABLE TRAINING PANTIES

Ruby S. LaFleur, 10490 W. Outer Dr., Detroit, Mich. 48223

Filed Jul. 25, 1979, Ser. No. 60,688
Int. Cl.³ A41B 9/04
U.S. Cl. 2—408 **1 Claim**



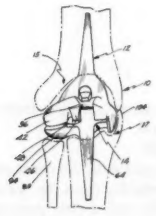
1. A training panty for babies and toddlers, comprising, in combination, a panty member including front and rear panels, an endless waistband around upper edges of said panels, and a pair of downward legs at the sides of said panels, with openings therethrough, and a crotch member between said legs; said crotch member comprising a separate paper insert that is fitted in a crotch opening at a crotch of said panty member; opposite ends of said insert being supported between each of said panels and a downward, depending flap secured to an inner side of each said panels; each of said crotch inserts comprising a control panel, and a folded-over front extension and a folded-over rear extension at opposite ends thereof, a plurality of perforated holes punched out through each said front and rear extensions, and also through opposite ends of said control panel, a loop pile fastener secured to an outward side of each said flaps, and said loop pile fastener comprising a plurality of stiff plastic bristles having hooked ends hooked through said perforated holes of said insert.

4,280,231

ELBOW PROSTHESIS

Alfred B. Swanson, 2945 Bonnell, S.E., Grand Rapids, Mich. 49506

Filed Jun. 14, 1979, Ser. No. 48,682
Int. Cl.³ A61F 1/03
U.S. Cl. 3—1.91 **15 Claims**



1. A total elbow prosthesis for implantation in the humerus and ulna and providing lateral stability during extension and flexion motion of the prosthesis after implantation, said prosthesis comprising:

a humeral component having a main body portion defining a plurality of generally semi-circular distally positioned portions having bearing surfaces;

an ulnar component having a main body portion defining a convex posterior surface adapted to be received within a prepared semi-lunar notch of the ulna and further defining a plurality of semi-circular grooves configured to matingly receive said distally positioned portions of said humeral component; and

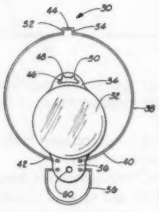
slipfit hinge means defined by and a part of said ulnar component and said humeral component for detachably and hingedly interconnecting said components together in a slipfit fashion after implantation of the prosthesis thereby alleviating the transmission of excessive stresses to the bones and loosening of the components, said ulnar component further including a capitulum member having a distal surface against which the radius bone articulates after implantation.

4,280,232

INTRAOCULAR LENS DEVICE

Robert A. Hummel, 4200 W. Memorial Rd., Suite #308, Oklahoma City, Okla. 73120

Filed Apr. 28, 1980, Ser. No. 144,683
Int. Cl.³ A61F 1/16
U.S. Cl. 3—13 **17 Claims**



1. An artificial intraocular lens device, comprising:

a lens having anterior and posterior surfaces formed to provide prescribed optical focal properties;

a superior haptic rim of planar form extending from an upper edge of said lens and including a fenestration therethrough;

a superior loop of resilient material having first and second ends secured adjacent the lower edge of the lens and extending circularly around said lens while having greater width than said lens; and

stirrup means formed in the mid-portion of said superior loop which may be forced into affixation within said fenestration thereby to laterally extend the opposite side lobes of said superior loop.

4,280,233

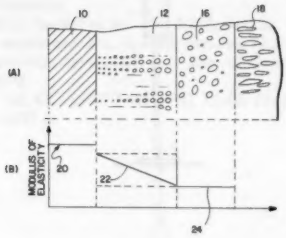
BONE CONNECTIVE PROSTHESIS COMPRISING A REINFORCEMENT ELEMENT CARRYING A POLYMER LAYER HAVING A VARYING MODULUS OF ELASTICITY

Simon Raab, 5872 Westbury Ave., Montreal, Quebec, Canada H3W 2W9

Filed Aug. 3, 1979, Ser. No. 63,434
Claims priority, application United Kingdom, Feb. 15, 1979, 05445/79
Int. Cl.³ A61F 1/24
U.S. Cl. 3—1.91 **21 Claims**

1. A prosthesis adapted to be fixedly attached to bone by means of bone cement, said prosthesis comprising a reinforcement element, at least a portion of the surface of said reinforcement element carrying a polymer layer having substantial thickness, the exterior surface of said polymer layer constituting the bone attachment surface of said prosthesis, the interior surface of said polymer layer being secured to said reinforcement element, said polymer layer having a varying modulus of elasticity such that the modulus of elasticity of portions of said layer adjacent said interior surface is essentially constant and the modulus of elasticity of portions adjacent said exterior surface is essentially constant, said modulus of elasticity of said

portions adjacent said interior surface being greater than said modullus of elasticity of said portions adjacent said exterior surface, portions of said layer which are between said portions adjacent said exterior surface and said portions adjacent said



interior surface having a modulus of elasticity which is intermediate with respect to the moduli of said portions adjacent said exterior and interior surfaces and wherein the modulus of elasticity of said layer decreases in the direction of interior to exterior.

4,280,234

BATH AID

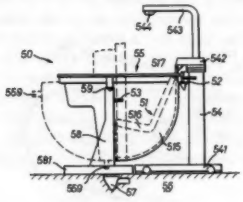
Hans Sax, Frauenfelderstrasse 81, Winterthur, Switzerland

Filed Jul. 9, 1979, Ser. No. 55,503

Claims priority, application Switzerland, Jul. 24, 1978, 7957/78

Int. Cl.[3] **A47K** *3/022;* **F24H** *1/00;* **A47K** *3/08*

U.S. Cl. 4—540 **7 Claims**



1. A bathing equipment,

comprising in combination,

a tub member pivotable about a horizontal axis between an initial and an operative position, and being adapted to be filled with a bathing liquid when in the operative position, and

a chair member having seat and backrest portions,

at least one of said members being movable relative to the other to and from a station of close contact,

said tub member, when the members are in said station of close contact, being adapted to face said chair portions and being pivotable to said operative position, receiving interiorly, in said operative position, at least a portion of said chair,

said seat and backrest portions of said chair member defining a closed chamber adapted to be filled with a fluid of a predetermined temperature, the fluid thereby being in heat exchange contact with a major portion of the body of a person seated on said chair member,

whereby said chamber may be filled with said fluid to provide comfortable warmth to the major portion of the body of a person seated on said chair member, preparatory to said chair member being moved into the tub member, whereafter said chair member may be moved into said station of close contact for subsequently bathing said person in the tub member in the operative position holding liquid, while seated on the chair member, said tub member after discharge of the liquid may subsequently be returned to its initial position, and the chair member and the person sitting thereon be moved away from said tub member,

wherein said tub member has a wall portion defining an internal surface facing and matching the contour of the external rear surface of said backrest portion when said chair is received inside the tub member in said operative position thereof, and wherein said tub member has a predetermined volume for receiving said liquid, and wherein said chair member has a liquid-displacement volume of at least 30% of said predetermined volume.

4,280,235

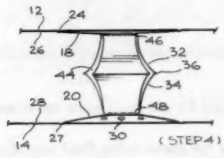
INSERTS FOR FLUID-TYPE MATTRESSES

Emil D. Kowal, 4925 Santa Anita Ave., Temple City, Calif. 91780

Filed Feb. 26, 1980, Ser. No. 124,767

Int. Cl.[3] **A47C** *27/08;* **B32B** *31/00*

U.S. Cl. 5—458 **12 Claims**



1. In a fluid-type mattress having upper and lower boundary sheets with each of said sheets being defined by inner and outer surfaces, an improved flow damping and shape-defining insert comprising:

a first flexible flange sealed at its periphery to the inner surface of the upper boundary sheet;

a second flexible flange sealed at its periphery to the inner surface of the lower boundary sheet in a location substantially opposite to the location of the first flexible flange; and

damping means extending between the first and second flexible flanges and sealed thereto;

wherein the seals between the damping means and the flanges are more easily rupturable than the seals between the flanges and the mattress boundary sheets.

4,280,236

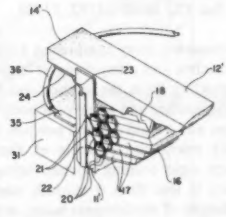
SELF-UNCAPPING HONEYCOMB AND EXTRACTOR MEANS FOR USE THEREWITH

Luther R. Herman, 306 Brooks Ave., Raleigh, N.C. 27607

Filed Jun. 8, 1979, Ser. No. 46,952

Int. Cl.[3] **A01K** *47/02, 59/02*

U.S. Cl. 6—2 R **10 Claims**



1. A beekeeping means comprising: a honeycomb frame; an artificial honeycomb having a plurality of open ended cells therein mounted within said frame; heating means disposed adjacent the open ends of said cells; and means for causing said heating means to rise in temperature whereby when said hon-

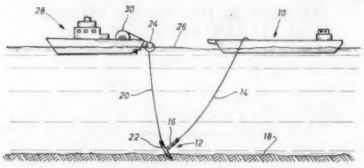
eycomb and its associated frame are placed in a bee hive, said cells will be filled with honey and sealed with beeswax by the bees therein and when said comb and frame are removed from the hive, said sealing wax can be readily removed from said cells by said heating means.

4,280,237

FLOATING BUOY

Warren A. Petrie, New Orleans, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.

Filed Oct. 2, 1978, Ser. No. 947,356
Int. Cl.[3] B63B *21/52*
U.S. Cl. 9—8 R **14 Claims**



1. A floating buoy for use in a marine environment, the buoy comprising:

a buoyant body for maintaining the buoy afloat with a first end of the body directed upwardly to constitute its upper end during use;

a first securing platform on the upper end of the body; and

a first protective cap removably secured to the first securing platform to extend over the upper end of the body for providing a protective surface over that end to protect the body from contact with a marine vessel during use;

the first protective cap being generally dome shaped to provide a convex protective surface for minimizing impact damage to a marine vessel during impact between the protective cap and such a marine vessel when the buoy is in use, and the first protective cap further extending beyond the periphery of the first securing platform to cover the platform and prevent contact between the platform and a marine vessel during use.

4,280,238

SINGLE-POINT MOORING BUOY

Willem J. van Heijst, Monte-Carlo, Monaco, assignor to Single Buoy Moorings, Inc., Fribourg, Switzerland

Continuation of Ser. No. 850,056, Nov. 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 688,738, May 21, 1976, abandoned. This application Jul. 18, 1979, Ser. No. 58,729
Claims priority, application Netherlands, Sep. 3, 1975, 7510415; Dec. 24, 1975, 7515095
Int. Cl.[3] B63B *21/52, 51/02*
U.S. Cl. 9—8 R **6 Claims**

1. Single-point mooring buoy comprising a column hingedly connected to an anchor and comprising at least one rigid column portion upstanding from the anchor and hingedly interconnected with the anchor and a buoyant body hingedly connected to the upper end of said column portion, the body being at least principally below the water level, the mass and the dimensions of each rigid column portion being such that its bending frequency is less than 6 seconds and its length is greater than the height of the buoyant body, and the mass and the dimensions of the buoyant body being such that its period of movement is greater than 16 seconds, the dimensions of each said column portion being such that its period of movement is greater than 16 seconds, said bending frequency less than 6 seconds and said periods of movement greater than 16 seconds being so different from the frequency of about 12 seconds of waves of highest energy, that the buoy undergoes little movement under wave action, whereby the loads on the buoy and

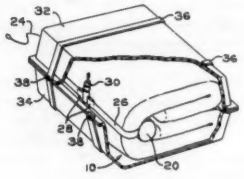
portion and the anchor remain low even when a ship is moored at the buoy.

4,280,239

SELF RIGHTING, AUTOMATICALLY INFLATABLE LIFE RAFT

Eugene W. Brown, North Canton, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 889,590, Mar. 23, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,562
Int. Cl.[3] B63C *9/22*
U.S. Cl. 9—11 A **1 Claim**



1. In combination,

a raft container formed of separable sections,

a life raft having circumferential inflatable side walls and a floor folded within said container,

a source of compressed gas,

a sleeve securing said source of compressed gas to one wall of said life raft,

valve means coupling said inflatable side walls and said source of compressed gas,

strap means secured to said sleeve and separably encompassing a central portion of said folded life raft around said inflatable side walls adjacent said source of compressed gas to temporarily restrict inflation around the encompassed portion, said strap means including a breakable string separable upon continued inflation of said inflatable side walls,

and a lanyard extending from said valve means to exterior of said container whereby a yank on said lanyard will activate said valve means to inflate said raft to sequentially separate the sections of said container to free said raft therefrom, then further inflate the non-central portions of said side walls to position said raft in a self-righting orientation, then further inflate said raft to break said string to eliminate the inflation restriction and complete inflation of the raft in the proper erect orientation.

4,280,240

HANDLE FOR WATER SKI TOWLINE WITH ENGAGEMENT AND DISENGAGEMENT MEANS FOR WATER SKI SAFETY BELT

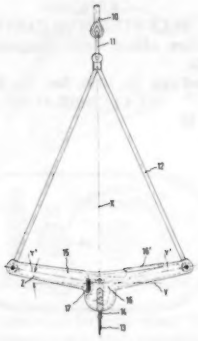
Wilhelm Neuscheler, Spitzholzstr. 113, 7032 Sindelfingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 5,232, Jan. 22, 1979. This application Sep. 4, 1979, Ser. No. 72,286

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838393

Int. Cl.³ A63C *5/00, 9/00, 11/00, 15/00*

U.S. Cl. 9—310 A **8 Claims**



1. Handle for a water ski towline comprising two shell-like halves defining a bar-type handle that is grippable by both hands of a skier so as to be holdable in a generally horizontal orientation during skiing, an engagement and disengagement means for detachably securing a pull strap secured to a connecting strap of a safety belt for water skiers to said handle, said engagement and disengagement means being located between areas of said handle that are grippable by respective hands of the skier and having an engagement finger that is engageable in a cutout of the pull strap, and spring means for biasing said finger toward a first engagement position within said cutout.

4,280,241

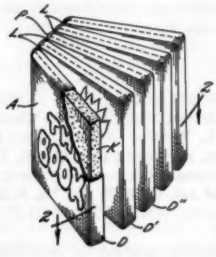
CHILD'S BOOK

Deborah L. Pfaff, 150 17th Ave., San Francisco, Calif. 94121

Filed Oct. 18, 1979, Ser. No. 86,151

Int. Cl.³ B42C *19/06;* **B42D** *3/00*

U.S. Cl. 11—1 R **9 Claims**



1. A book having a plurality of leaves, each leaf comprising a core of flexible foam enclosed within a pocket of conforming material, the aligned, open ends of said foam-filled pockets being juxtaposed against and hinged to a binding, said pockets which comprise said leaves being formed from a substantially continuous web of said material.

4,280,242

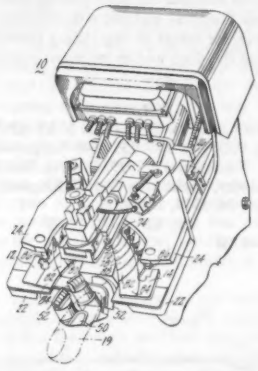
SEGMENTED LASTING WIPER

Andrew J. Gilbride, Swampscott, Mass., assignor to USM Corporation, Farmington, Conn.

Filed May 3, 1979, Ser. No. 35,895

Int. Cl.³ A43D *21/00*

U.S. Cl. 12—12.4 **3 Claims**



1. A wiper arrangement for a shoe lasting machine for lasting a variety of sizes and styles of shoes therewith, including:

a frame in said machine for supporting said wiper arrangement thereon;

said wiper arrangement comprising:

a pair of wipers each mounted in a movable wiper carrier;

each wiper being adjustably arrangable with respect to its carrier to define any required contour, permitting said wiper to last a variety of shoe sizes and shapes;

each of said wipers being comprised of a plurality of arcuate segments, each segment being adjustable with respect to one another and to said carrier, to provide said contour which is defined by the distal ends of said segments.

4,280,243

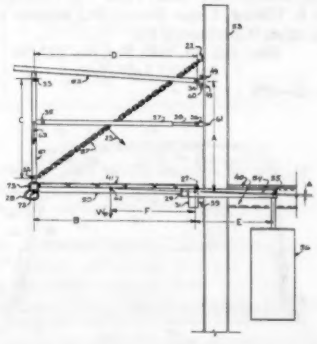
BULK LOADING FACILITY HAVING A DROP WAY

Richard Durrant, 1124 Cambridge Crescent, Sarnia, Ontario, Canada N75 3Z9

Filed Aug. 6, 1979, Ser. No. 64,030

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.1 **26 Claims**



1. Improvement in a bulk loading facility having a fixed deck having a vertical column as a part thereof and a drop way hinged to said deck so that it can be raised or lowered for loading, said improvement comprising said drop way having a

handrail assembly including a handrail and a post for said handrail, said handrail and said post hinged to each other, said post hinged to said drop way, said drop way, said handrail hinged to said column, and a four-bar mechanism consisting of said drop way, said handrail, said post and a portion of the column between the handrail and said drop way, said four-bar mechanism constructed so that the sum of the lengths of said column portion and said top rail is greater than the sum of the lengths of said drop way and said post, whereby said drop way has an over-center action during raising thereof which assists in maintaining the drop way in its raised position.

4,280,244

DIRT COLLECTING FLOOR MAT APPARATUS

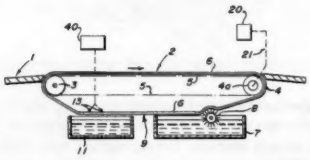
Ernst Spirig, P.O. Box 160, CH-8640 Rapperswil, Switzerland

Filed Sep. 17, 1979, Ser. No. 76,495

Claims priority, application United Kingdom, Oct. 5, 1978, 39478/78; Jul. 24, 1979, 25684/79

Int. Cl.³ A47L *23/22*

U.S. Cl. 15—97 R **12 Claims**



1. A dirt-collecting floor mat apparatus for cleaning the shoes of a pedestrian at a given location adjacent an opening contained in a floor surface, comprising

(a) a mat formed of synthetic plastic material having a high plasticizer content;

(b) means supporting said mat in a position in which a first portion of one surface thereof is in exposed relation relative to the floor opening;

(c) means for initially cleaning a second portion of said one mat surface remote from the floor opening;

(d) means for subsequently applying a tacky plasticizer material to said clean second mat portion; and

(e) means for displacing said mat to cause said second mat portion to be in exposed relation within the floor opening.

4,280,245

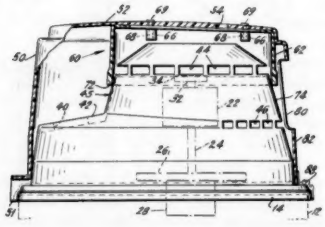
SOUND DOME FOR ELECTRIC VACUUM CLEANER

Kenneth R. Hiester, Cogan Station, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Feb. 19, 1980, Ser. No. 122,380

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—326 **9 Claims**



1. In a bypass type vacuum cleaner, including a housing, said housing having a main outlet for air transported through the vacuum cleaner by a main blower fan, an inlet for cooling air to a motor for driving the main blower fan and an outlet for the cooling air from the main blower fan motor,

a sound dome positioned over said housing and enclosing, under said sound dome, said main outlet, said cooling air inlet for the motor and said cooling air outlet; said sound dome being large enough to define a plenum under said sound dome for the air moving out of said main outlet; an outlet from said dome located away from said main housing outlet, whereby the air exiting from said main housing outlet will be redirected through said plenum to said dome outlet.

4,280,246

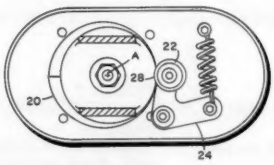
SELF-STEERING CASTER

Carl O. Christensen, Alamo, Calif., assignor to Roll-Rite Corp., Oakland, Calif.

Filed Jan. 10, 1980, Ser. No. 110,895

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—35 D **8 Claims**



1. A self-steering caster, comprising:

(a) mounting bracket means;

(b) a wheel assembly including wheel means and wheel bracket means rotatably carrying said wheel means, said wheel assembly being mounted on said mounting bracket means for swiveling movement with respect thereto about a swivel axis; and

(c) steering means operatively interposed between said mounting bracket means and said wheel assembly so as to bias said wheel assembly into at least one predetermined position with respect to said mounting bracket means, said steering means including:

(i) cam surface means generally in the shape of a circle coaxial with said swivel axis whose radius increases at a generally linear rate from at least one first point on said cam surface in both directions to at least one second point on said cam surface remote from said first point; and

(ii) bias wheel means rollingly engaging said cam surface means, the surface of said bias wheel means being biased against said cam surface means;

(d) said cam surface means being associated with one of said mounting bracket and wheel assembly, and said bias wheel means being associated with the other.

4,280,247

LUGGAGE CASE HANDLE ASSEMBLY

Don N. Burzen, Groton, Mass.; David E. Workman, Evergreen, Colo.; Robert L. Bromley, Aurora, Colo.; Daniel G. Elles, Kittredge, Colo., and James E. Wilkuski, Evergreen, Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Jul. 10, 1979, Ser. No. 56,207

Int. Cl.³ A47B *95/02*; A47J *45/00*; B65D *25/28*; E05B *1/00*

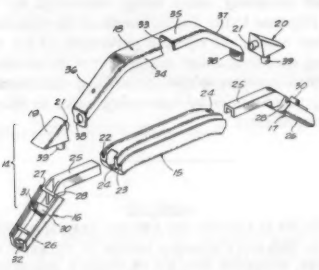
U.S. Cl. 16—112 **6 Claims**

6. A handle assembly adapted for swiveling securement to the outer wall of a luggage case, comprising:

an elongated member constructed of a material compliant to finger pressure, which member has a passageway extending longitudinally therethrough and terminating at opposite ends of the member in first and second openings respectively, and first and second longitudinal grooves on an outer surface of said member;

first and second end parts received in the respective first and second openings of the elongated member and extending outwardly from said member at the same angle and lying in the same plane, said end parts having a pair of recessed shoulders;

an elongated metal cover of generally U-shaped cross-section the side edges of which are received within the respective member grooves and end points recessed shoulders, said cover having its two end portions formed into parallel relation with each of said end portions including an opening therethrough;



means affixing said metal cover to said first and second end parts; and

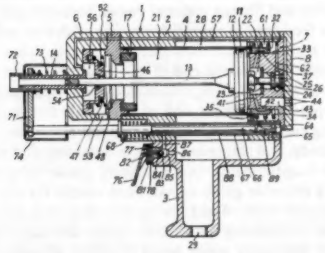
first and second stanchions for securement to the outer wall surface of the luggage case, each stanchion having a stub shaft received within one of the cover end portion openings, the geometry of the stub shaft terminal ends and cover end portions being such that the shaft terminal ends can only pass through said openings for one relative angular orientation and obstructed from passage therethrough for all other angular orientations.

4,280,248

COMPRESSED-AIR PISTOL OF THE HUMANE KILLER TYPE

Jean-Frederic Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, France

Filed Dec. 13, 1978, Ser. No. 969,091
Claims priority, application France, Dec. 16, 1977, 77 37989
Int. Cl.³ A22B *3/02*
U.S. Cl. 17—1 B **7 Claims**



1. A compressed air pistol, comprising a cylinder having a closing wall at its forward end and open at its rear end,

a piston disposed with said cylinder having a rod extending through a hole formed in the closing wall of said cylinder and movable in a forward stroke and a return stroke,

a reservoir of compressed air,

first valve means at the rear end of said cylinder operative to supply compressed air from said reservoir to said cylinder to effect the forward stroke of said piston,

said first valve means comprising:

a closed housing disposed over said cylinder to define therewith a chamber having an annular portion surrounding said cylinder and a portion extending to the rear of said cylinder,

a closure member movably disposed within the extending chamber portion of said housing in opposition to the rear end of said cylinder,

spring means biasing said closure member against the rear end of said cylinder to normally occlude said cylinder, and

control means comprising trigger means, and a reversing valve independently operable from said trigger means between at least two selected positions, said trigger means and said reversing valve cooperating so that in one position of said reversing valve compressed air is supplied to the extending chamber portion to maintain said closure member fixed in occlusion with said cylinder, and in the other position of said reversing valve said extending chamber is open to atmosphere, to permit said closure member to move against the spring bias to open said cylinder to the annular chamber portion, whereby the compressed air therein actuates said piston, in its forward stroke,

second valve means at the front end of said cylinder operative to supply compressed air from said reservoir to said cylinder to effect the return stroke of said piston, and

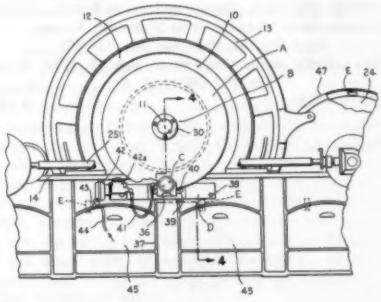
switch means operable in response to operation of said control means to supply compressed air from said reservoir to said second valve means to effect the return stroke of said piston and operable on completion of the return stroke of said piston to close off the supply of compressed air thereto.

4,280,249

CARD DRIVE OPERATING APPARATUS AND METHOD

Jerry B. Lowe, Tr. 1, Box 58, Simpsonville, S.C. 29681

Continuation-in-part of Ser. No. 890,253, Mar. 27, 1978, Pat. No. 4,187,585. This application Mar. 15, 1979, Ser. No. 20,911
Int. Cl.³ D01G *15/36*
U.S. Cl. 19—98 **6 Claims**



1. A drive for a card having a motor for driving various carding elements including a main cylinder and other carding components, said carding elements having cover elements comprising:

electrically actuated braking mechanisms for instantaneously stopping said carding elements;

a series of elongated conductor bars;

insulating mounting means carrying said bars on respective cover elements;

fasteners carried by respective bars providing a quick disconnect coupling with an adjacent conductor bar permitting removal of a bar with removal of a respective cover;

conducting means connecting adjacent bars; and

means for actuating said braking mechanism responsive to

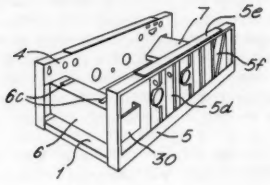
disconnecting of a quick disconnect coupling and removal of a respective bar and cover.

4,280,250

TEXTILE CARDING MACHINE FRAME CONSTRUCTION

Graham Martin, Bolton, England, assignor to Platt Saco Lowell Limited, England

Filed Jul. 26, 1979, Ser. No. 61,550
Int. Cl.³ D01G *15/32*
U.S. Cl. 19—98 **13 Claims**



1. A carding machine for textile fibres comprising a taker-in cylinder, a main cylinder and a doffing cylinder, and including

a frame for supporting said cylinders and comprising two longitudinally extending frame side members laterally spaced from each other, each of the frame side members being constructed from sheet steel and having a substantially flat surface facing inwardly and an upper surface for supporting at least one of the cylinders,

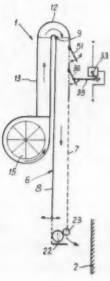
the frame further comprising two sheet steel cross members of hollow cross section each of which interconnects the two frame side members and has its two ends welded to the inwardly facing flat surface of the respective frame side member.

4,280,251

FEED CHIMNEY FOR A TEXTILE MACHINE SUPPLIED WITH TEXTILE FIBER TUFTS

Guy Ludwig, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France

Filed Feb. 12, 1980, Ser. No. 120,757
Claims priority, application France, Feb. 19, 1979, 79 04105
Int. Cl.³ D01G *15/40*
U.S. Cl. 19—105 **4 Claims**



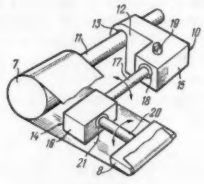
1. A feed chimney for machines designed to process fiber tufts and especially carding machines, the fiber tufts being supplied from a feed duct connected to an area for storage of tufts at atmospheric pressure, said chimney being constituted by a casing of rectangular section having a large face formed by a perforated wall, the upper end of said casing being connected to the outlet of a fan whose intake is connected to said feed duct whilst the lower end of the casing fitted with delivery rollers for the web of fibers is adapted to be connected to a machine and in particular to a carding machine, the upper portion of one wall of the casing being provided with a regulating valve which opens towards the exterior and is urged by restoring means to the closed position thereof, wherein the fan intake is connected to the feed duct by means of a tube in which is mounted a reversing valve having two positions, namely a first position in which said reversing valve establishes a connection between the fan intake and the feed duct alone and a second position in which said valve establishes a connection between said fan intake and the surrounding atmosphere alone, said reversing valve being controlled by actuating means in response to the displacements of the regulating valve or, in other words, the opening movement of the regulating valve being such as to cause changeover of the reversing valve to its second position whilst the closing movement of said regulating valve causes said reversing valve to return to the first position thereof.

4,280,252

DOUBLE-APRON DRAWING MECHANISM

Gennady N. Shlykov, Chilanzar, kvartal 19, 31, kv. 3; Vasily M. Dyachkov, Kuiljuk-4, 23-a, kv. 11; Vitaly I. Zhestkov, Chilanzar, kvartal 19, 26, kv. 41, and Valentin N. Tikhonov, ulitsa Sh.Rustaveli, 55, kv. 28, all of Tashkent, U.S.S.R.

Filed Jul. 23, 1979, Ser. No. 60,019
Int. Cl.³ D01H *5/88*
U.S. Cl. 19—255 **5 Claims**



1. A double-apron drawing mechanism comprising, a feed couple for feeding a fibrous material along a longitudinal path of travel; a delivery couple for said fibrous material on said path of travel downstream of said feed couple; two driven endless aprons on said feed couple driven in synchronism and having two opposed runs defining a treatment zone in said path of travel for said fibrous material passed between said opposed runs; said feed couple comprising a pair of driven rolls one of which is a pressure roll; said delivery couple being disposed downstream from an exit end of said treatment zone at which said fibrous material exits; a fixed stationary feed guide of said feed couple spaced from one of said rolls for guiding and supporting one of said endless aprons traveling over said stationary guide, said stationary guide maintaining said one apron extended longitudinally, said stationary guide being disposed opposite a movable guide on said feed couple for guiding and supporting the other of said aprons traveling over the movable guide and maintaining said other apron extended longitudinally, said stationary guide being disposed adjacent said exit end; mounting means mounting said movable guide in the vicinity of said exit end of said treatment zone for variably adjusting a gap between said runs of the aprons, comprising a driving shaft for said pressure roll, a link mounted on said shaft comprising a guide carrier pivotally mounted for carrying said movable guide and movable variably angularly to position said movable guide in inclination relative to a plane extending parallel to said path of travel, and a pivotally mounted holder for said movable guide movable variably angularly to position the movable guide in inclination transversely of said plane.

4,280,253

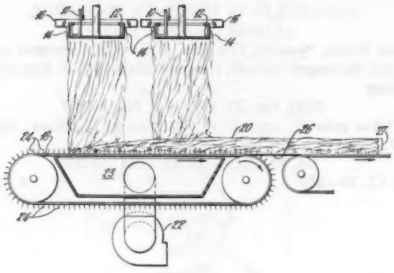
METHOD FOR COLLECTING FIBROUS MATERIAL

Dennis S. Holt, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 16, 1979, Ser. No. 21,054

Int. Cl.³ D04H 5/08

U.S. Cl. 19—296 **2 Claims**



1. In a method for producing an insulation pack of fibrous mineral material of the type in which mineral fibers are formed from a plurality of spinners, the mineral fibers are directed downwardly onto a foraminous collection surface to form the insulation pack thereon, gases are drawn downwardly through said foraminous collection surface and the insulation pack to urge the mineral fibers toward said foraminous collection surface, wherein the improvement comprises: intercepting a portion of the mineral fibers during formation of the insulation pack with a plurality of elongate members which extend from said foraminous collection surface to prevent said portion of fibrous material from being drawn by the downwardly flowing gases into the lower portion of the insulation pack.

4,280,254

BELT RETENTION MEANS FOR GARMENTS

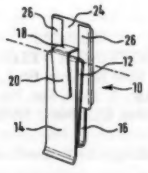
Joseph Racke, 120, Edgware Way, Edgware, Middlesex, England

Continuation of Ser. No. 908,771, May 23, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,146

Claims priority, application United Kingdom, May 24, 1977, 21909/77; Jun. 20, 1977, 25615/77

Int. Cl.³ A44B 11/00

U.S. Cl. 24—336 **7 Claims**



1. A belt retention clip for engaging the waistband of a garment, said clip comprising:

a base portion,

an outwardly and downwardly depending arm positioned adjacent said base portion and adapted to engage the waistband of the garment therebetween, and

an outwardly and upwardly extending arm positioned adjacent said base portion and adapted to receive the belt therebetween,

said first-mentioned arm and base portion being provided with means for retaining the clip on the garment waistband,

said outwardly and upwardly extending arm being provided with an ornamental member,

said ornamental member having inwardly turned side flange means for sliding said ornamental member on and removing said ornamental member from the outwardly and upwardly extending arm,

wherein the upper end of said outwardly and upwardly extending arm terminates in an inwardly extending portion and a downwardly extending abutment portion, the latter engaging said outwardly and downwardly extending arm.

4,280,255

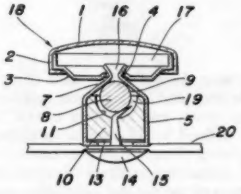
BUTTON

Hidenosuke Ishizaki, 6-13, 6-chome, Motoyamakita-machi, Higashinada-ku, Kobe-shi, Japan

Filed Feb. 19, 1980, Ser. No. 122,185

Int. Cl.³ A44B 1/42

U.S. Cl. 24—95 **3 Claims**



1. A button comprising:

a button face member,

a support plate having a center hole for supporting the face member,

a hollow button shank having upper and lower open ends, a constricted neck at its upper portion and a shoulder extending downward from the constricted neck, the neck having a smaller diameter than the center hole, the shoulder having a larger diameter than the center hole,

a bending guide member in the form of a ball disposed within the shank and having a bending and guiding spherical surface;

an engaging member having a center bore extending therethrough and disposed within the shank and under the bending guide member, and

a fastening member having a piercing needle,

the support plate being loosely fitted around the neck of the shank and prevented from slipping off by an enlarged top portion formed at the upper end of the neck after the support plate has been loosely fitted around the neck,

the button face member being fitted over the support plate to form a button head from the face member and the support plate, the button head being pivotably turnably supported by a shank with the enlarged top portion of the shank positioned within the space defined by the face member and the support plate,

the shank being fastenable to a fabric or like sheetlike material by the piercing needle of the fastening member.

4,280,256

FASTENER APPARATUS

Hendrik J. de Jong, Groenlo, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek NEDAP, Groenlo, Netherlands

Filed Jan. 2, 1979, Ser. No. 343

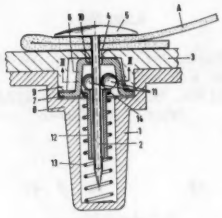
Claims priority, application United Kingdom, Jan. 3, 1978, 55/78

Int. Cl.³ A44B 9/00

U.S. Cl. 24—155 BR **5 Claims**

1. A fastener of the kind in which a pin can be inserted into

a closed housing between balls provided in a tapering space within said housing, the closed housing including biasing means for urging the balls into contact with an inserted pin so that the balls prevent the subsequent removal of said pin through the exercise of clamping action on said pin upon attempts to remove the pin from the housing, characterized by said housing having a chamber therein, and by the tapering space being defined by a substantially freely rotatable body housed in said chamber, said rotatable body having a tapering cavity therein defining the tapering space and a central aperture for the insertion of the pin therethrough, said tapering



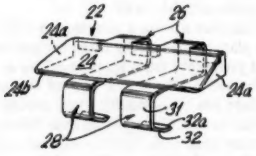
cavity containing the balls, said balls being enclosed within said rotatable body and having linear contact with the wall of said tapering cavity, said chamber of said housing having a wall thereof defined by an internal shoulder of the housing, said housing being closed by a cover having a central aperture aligned with said central aperture of said freely rotatable body for the insertion of the pin and a shoulder positionably spaced from the internal shoulder of the housing, said rotatable body being cap-shaped and having an outwardly projecting flange loosely held between the internal shoulder of the housing and the shoulder of the cover so that said rotatable body is rotatable with respect to said housing and said cover.

4,280,257

CLASP FOR ADJUSTABLE WATCH BAND

Andrew T. Kostanecki, Darien, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed May 23, 1979, Ser. No. 41,578
Int. Cl.³ A44B *5/00, 5/18*
U.S. Cl. 24—206 R **3 Claims**



1. In an adjustable wristwatch band having first and second strands each with a free end in partially overlapping relation to the other, each strand being formed of spaced transverse links abutting one another along the length of the strand,

an improved clasp for releasably connecting the overlapping strands together, said clasp comprising a decorative cover member attached to the free end of the first strand in overlapping relation to one side of the second strand, said cover member having a projecting strip member suitably bent to form a loop along one side for connection to the free end of the first strand and to form a transversely aligned hook adjacent the other side projecting toward the second strand with an intermediate portion of the strip member extending beneath the cover member from one side thereof to the other to complete the loop and hook and connect them together, the hook being adapted for insertion between abutting links of the second strand with a portion of said hook partially overlapping one of said abutting links on the other side of the second strand after insertion so that effective hooking action is provided around at least one link of the second strand.

4,280,258

CABLE SLEEVE HAVING A CLOSABLE, LONGITUDINAL SLIT

Dieter Kunze, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 34,127
Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820181
Int. Cl.³ B65D *63/00;* **F16L** *33/00*
U.S. Cl. 24—257 **4 Claims**

1. A cable sleeve having a closable, longitudinal slit extending therealong, said sleeve being a tubular member of shrinkable material and having a closure for said slit, said closure being a pair of overlapping edge portions of the member extending along the longitudinal slit, the outer edge portion of the pair having a bead being formed by a fold extending the length of the edge portion and forming a longitudinally extending groove opening towards the inside of the tubular member and the inner edge portion of the pair of edge portions, said inner edge portion having a longitudinally extending bead extending outwardly towards the groove and being snappable into said groove to hold the edge portions together in a sealed, overlapping relationship, and a support clamp being disposed on the bead of the outer edge portion to engage the fold adjacent the opening to hold the bead of the inner edge portion in said groove.

4,280,259

METHOD OF KNITTING A VELOUR LACE FABRIC

Rudolph G. Bassist, 1003 McGran Blvd., Lancaster, Pa. 17601

Filed Apr. 7, 1980, Ser. No. 137,871
Int. Cl.³ D06C *23/02*
U.S. Cl. 28—160 **3 Claims**

1. A method of making a knitted velour lace fabric, comprising the steps of:

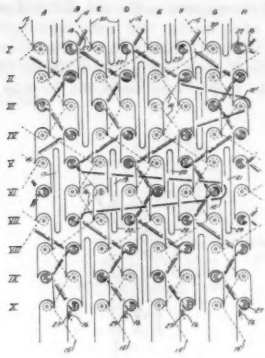
(a) knitting a net ground fabric having ground threads,

(b) knitting velour threads on to the ground fabric such that each velour thread substantially follows the path of one of the ground threads except that at points along the length of the velour thread the latter is extended across a plurality of wales of the ground fabric to form an elongated loop,

(c) knitting stitches of soluble yarn on to the ground fabric to temporarily hold the velour thread loops flat against one face of the ground fabric, and

(d) thereafter treating the fabric with a liquid or vapor at a temperature and for a sufficient time to dissolve only the soluble yarn so as to free the velour thread loops to

project outwardly from said face of the ground fabric, while leaving substantially all the non-looped remaining



portion of each velour thread doubled with said one of the ground threads.

4,280,260

APPARATUS FOR THREADING UP A TEXTURIZING NOZZLE

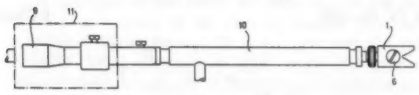
Wolfgang Martin; Hans Knopp, both of Ludwigshafen; Dieter Herion, Frankenthal; Gerhard Conzelmann, Otterstadt; Guenter Leuchtmann, Mannheim, all of Fed. Rep. of Germany; Peter Gujer, Winterthur, Switzerland; Dieter Guldenfels, Dinhard, Switzerland, and Armin Wirz, Ossingen, Switzerland, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,173

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817478

Int. Cl.³ D02G *1/12*

U.S. Cl. 28—255 **6 Claims**



1. An apparatus for introducing at least one thread into a fluid-jet texturizing nozzle, said texturizing nozzle comprising an inlet member means of variable cross-section and a reduced pressure chamber, the texturizing nozzle together with the inlet member means being pivotably arranged and adapted to attach to said reduced pressure chamber in such a way that reduced pressure, relative to atmospheric pressure, can be set up at the inlet member means of the texturizing nozzle for drawing a cut thread end into the nozzle, said inlet member means of variable cross-section being formed by a rotatable cylindrical stopcock having a variable bore formed by a larger cylindrical bore and a smaller cylindrical bore means, said smaller cylindrical bore positioned at an angle of 20° to 90° to said larger cylindrical bore, and the web between the two bores being removed whereby the free cross-section can be altered so as to provide, as desired, a variable cross-section in the inlet member means.

4,280,261

PROCESS FOR MAKING HEATHER YARN FROM BULKED CONTINUOUS-FILAMENT YARNS

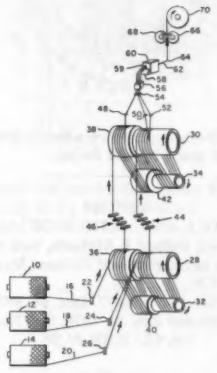
Thomas L. Nelson, Georgetown, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 969,933, Dec. 15, 1978, Pat. No. 4,222,223.

This application Mar. 3, 1980, Ser. No. 126,297

Int. Cl.³ D02G *1/16, 3/04, 3/34*

U.S. Cl. 28—271 **3 Claims**



1. An improved process for making a bulked, continuous-filament, heather-dyeable yarn which includes the steps of feeding from separate sources at least two differentially dyeable types of bulked, continuous-filament component yarns, each component yarn consisting essentially of filaments of the same dyeable type and being substantially free of yarn twist and of filament entanglement, into a trnasverse-impingement fluid-jet filament intermingling zone with at least 5% overfeed and collecting the resulting heather-dyeable combined yarn, wherein the improvement comprises differentially overfeeding a component yarn of one type, which type consists essentially of filaments that are lighter dyeing than the filaments in the other yarn types and that comprise from about 20% to about 50% of the total filaments in the component yarns, to the zone at a percent overfeed which is from about 15% to about 45% above the percent overfeed of the other component yarn types and randomly entangling filaments in said zone within and among the component yarns to provide a coherent heather-dyeable combined yarn having a mean separation distance by the lateral pull-apart test of no more than about 1.5 inches.

4,280,262

HYDRAULICALLY CONTROLLED VARIABLE DEFLECTION ROLL

Karl-Heinz Ahrweiler, Krefeld, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,475

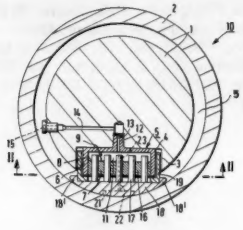
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905488

Int. Cl.³ B21B *31/32*

U.S. Cl. 29—116 AD **5 Claims**

1. A hydraulically controlled variable deflection roll comprising a rotative shell having an external work-rolling surface and a cylindrical inside, a fixed shaft extending through said inside with radial clearance permitting independent transverse bending of the shell and shaft, said shaft having at least one radial recess facing said inside, a plate spaced radially from the inside end of said recess and forming therewith a manifold space between the plate and said end, means for introducing hydraulic pressure to said space, said plate having extending therethrough a multiplicity of cylindrical holes each having a piston extending therethrough with an inner end in said space and an outer end projecting towards the shell's said inside, and

a bearing shoe having an outer surface bearing on the shell's said inside and an inner surface to which all of the pistons' said



outer ends collectively apply force when hydraulic pressure is introduced to said space by said means.

4,280,263

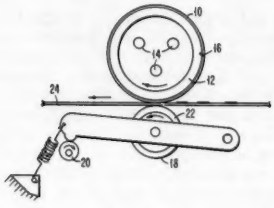
HEAT FUSER ROLL AND METHOD OF MANUFACTURE

Homer B. Dean, and Ballard T. Mahurin, both of Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 861,077, Dec. 14, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,263

Int. Cl.[3] **B21B** *31/08*

U.S. Cl. 29—132 **12 Claims**



1. The method of manufacturing a contact heat fuser roll for fixing a resinous powder image to a substrate comprising the steps of:

forming a thin film of an uncured silicone rubber material on the peripheral surface of a nondeformable base member;

curing the silicone rubber material on said base member; and

treating the cured silicone rubber material on said base member by irradiating its surface with a uniform predetermined low level of ultra-violet radiation for a predetermined time between about two and ten hours to produce a contact heat fuser roll having a thin deformable layer of silicone rubber of predetermined softness on its peripheral surface.

12. As an article of manufacture, a fuser roll prepared in accordance with the method of claim **1**.

4,280,264

METHOD FOR FABRICATING LARGE DIAMETER GEARS, GEAR-BLANKS AND THE LIKE

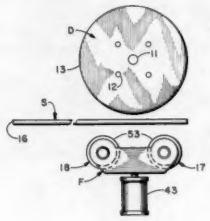
George Negrich, Sr., deceased, late of Bedford, Ohio, and by Helen Negrich, executrix, 711 Archer Rd., Bedford, Ohio 44146

Filed May 9, 1979, Ser. No. 37,921

Int. Cl.[3] **B21D** *53/28;* **B21K** *1/30;* **B21H** *5/00*

U.S. Cl. 29—159.2 **11 Claims**

1. A method for fabricating of gear blanks, including the steps of: producing a circularly-edged gear web plate disk; supporting the circular web disk for rotation about a central axis perpendicular to its plane; advancing a strip of elongated flat rim flange stock into a position with one end adjacent the edge of the web disk; in said position the plane of the strip being perpendicular to the plane of the web disk; forming the said end of the strip by advancing a spaced pair of parallel-axed forming rolls to engage and carry it against and arcuately shape it to the edge of the web disk; securing the rim strip in its portion arcuately conformed to the web disk and proximate to the actual end edge; driving said web disk rotationally with said one end as the strip leading end to draw the remainder of the said strip beneath the forming rolls, while the forming rolls are applied to the strip to keep, and form, the strip against the



web edge; welding a substantially continuous bead between the rim strip and the web disk as the strip has thus continuously been formed to the disk periphery; and continuing the web drive for roll forming of the rim strip stock and the simultaneous welding until a trailing end edge of the strip stock is brought into juxtaposed relation with the lead end edge to complete a rim on the disk, thereby to produce a weldment gear blank.

4,280,265

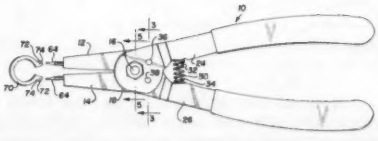
PLIERS

James W. Murphy, 1001 Skylark Dr., Denton, Tex. 76201

Filed Sep. 10, 1979, Ser. No. 73,747

Int. Cl.[3] **B23P** *19/04*

U.S. Cl. 29—229 **9 Claims**



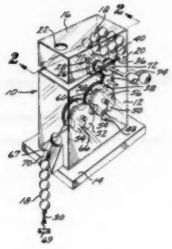
1. Retaining ring pliers comprising: a pivot; first and second coplanar movable jaws arranged to rotate about said pivot; first and second handles pivotally secured to said pivot on opposed sides of said first and second jaws; and attachment means disposed on each jaw for alternately engaging said first jaw to said first handle and said second jaw to said second handle in a first position and engaging said first jaw to said second handle and said second jaws to said first handle in a second position to shift a fulcrum point of each jaw to permit changing the pliers from a position wherein said jaws move inwardly as the handles are moved inwardly to a position wherein the jaws move outwardly as the handles are moved inwardly.

4,280,266

AUTOMATIC BEAD THREADING TOY

Tohru Tomita; Shinya Saitoh, both of Tokyo, and Kazuo Hirakata, Ichikawa, all of Japan, assignors to Takara Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1980, Ser. No. 112,395
Claims priority, application Japan, Jan. 26, 1979, 54-7740[U]
Int. Cl.[3] B25A *19/04*
U.S. Cl. 29—241 17 Claims



1. A toy device for threading a plurality of small objects on a thread and the like, the device comprising:

a chassis;

a container moveably mounted relative to the chassis and adapted for holding the plurality of small objects, each of the small objects having a substantially straight aperture penetrating through a portion of the small object, the container having an outlet port adapted for allowing passage under the force of gravity of only one of the small objects at a time through the port;

an elongated thin guide member mounted to the chassis and having a first and a second end, the first end of the guide member being disposed in operative relationship with the outlet port of the container, the second end of the guide member being adapted for operative connection to the thread and the like, the guide member being sufficiently thin so as to allow each of the small objects to pass from the first end of the guide member to the second end of the guide member with the guide member penetrating through the aperture of the small object;

first means mounted relative to the chassis for shaking the container, the shaking motion being of such magnitude to generate random positioning of the small objects relative to the port and the first end of the guide member, the small objects as a result of the varying random positioning capable of falling through the outlet port with the guide member being disposed in their respective aperture, whereby the toy device is capable of passing the small objects from the container onto the thread and the like.

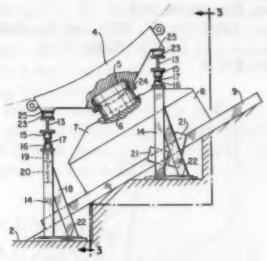
4,280,267

APPARATUS FOR AND METHOD OF DEMOUNTING SLIDE SHOE

Erik C. Christensen, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Creskill, N.J.

Filed May 24, 1979, Ser. No. 41,997
Claims priority, application United Kingdom, May 25, 1978, 22384/78
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—426.3 17 Claims

1. Apparatus for removal of a supported slide shoe of a slide shoe bearing, comprising at least two track means each being positioned so as to support a respective end of the slide shoe, means for raising each track means so as to lift the slide shoe



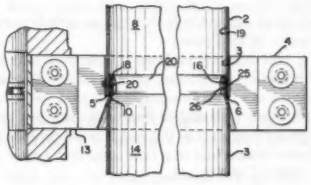
clear of its support and antifriction means for displacing the slide shoe generally along the track means.

4,280,268

ADHESIVE APPLICATION OF TWO-PART CONTAINER

Gerald Gordon, Skokie, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Division of Ser. No. 54,780, Jul. 5, 1979. This application Jul. 18, 1980, Ser. No. 170,195
Int. Cl.[3] B23P *11/02*
U.S. Cl. 29—446 6 Claims



1. A method of bonding a pair of container sections end to end wherein each section has a metal thin-walled cylindrical body with an open end defined by an end portion having a raw edge comprising:

applying a bead of adhesive material of predetermined width on the interior side of the edge portion of one of said sections, and

inserting the other section into said one section while applying a hoop stress to the end portion of said other section to reduce the diameter thereof to slightly less than the internal diameter of said one section,

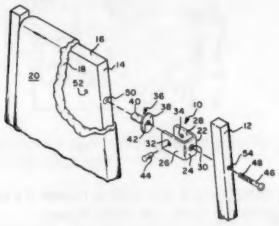
imbedding said end portion of said other section within said bead of adhesive while maintaining said end portion of the other section in radially spaced relation to said end portion of said one section to provide clearance therefrom and thereby leaving a film of adhesive material of predetermined thickness between the external side of the edge portion of the other section and the internal side of the edge portion of the one section,

and then releasing the hoop stress on said end portion of said other section to cause excess bonding material to be squeezed out from therebetween and leaving a thin coating of said material therebetween.

4,280,269
METHOD OF SECURING AN ARTICLE TO THE EDGE OF A PANEL

Thomas O. Marini, Marlton, N.J., assignor to Suntemp Industries, Inc., Blackwood, N.J.

Filed Jan. 24, 1979, Ser. No. 6,096
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—526 R 1 Claim

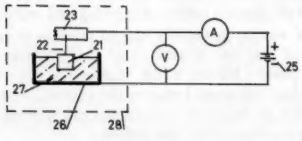


1. A method of securing an article to the edge of a panel including the steps of:
- forming an elongated first hole in the edge of said panel substantially perpendicular to said edge;
- forming a second hole through said panel inwardly of said edge, said second hole being formed in substantial axial alignment with said first hole but perpendicular thereto;
- placing a U-shaped member over said edge of said panel such that the bottom wall of said member overlies said first hole and the side walls of said member overlie said second hole;
- passing an elongated rod shaped element through apertures in the side walls of said U-shaped member and through said second hole to thereby secure said U-shaped member to said panel;
- covering said panel with padding and a sheet like material cover;
- passing an elongated bolt through an article to be secured to the edge of said panel;
- passing said bolt through an aperture in said padding and cover and in said bottom wall of said U-shaped member to engage a nut positioned between said side walls adjacent said bottom wall and in line with said first hole, and
- turning said bolt so that the end thereof threads into said nut and moves into said first hole until said article is secured to the edge of said panel.

4,280,270
PROCESS FOR THE MANUFACTURE OF TANTALUM SOLID ELECTROLYTE CAPACITORS

Balint Escher; Dominique Prince, and Jean Vasseux, all of Paris, France, assignors to Societe Lignes Telegraphics et Telephoniques, Paris, France

Filed Jun. 21, 1979, Ser. No. 50,800
Claims priority, application France, Jul. 28, 1978, 78 22363
Int. Cl.[3] H01G *9/00*
U.S. Cl. 29—570 4 Claims

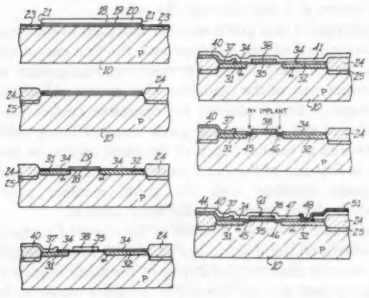


1. Process for accelerated ageing of tantalum solid electrolyte capacitors, characterized in that the capacitors mounted on a strip production unit are immersed in a bed of pulverous semiconducting material contained in a conductive receptacle connected to the negative terminal of a stabilized voltage source, of which the positive terminal is directly connected to the strip to which the anodes of the capacitors are fixed, the voltage of the said source being between 1.2 and 1.8 times the rated voltage of the capacitors, and the said mounting being maintained between 25° C. and 180° C. for a minimum period of two hours.

4,280,271
THREE LEVEL INTERCONNECT PROCESS FOR MANUFACTURE OF INTEGRATED CIRCUIT DEVICES

Perry W. Lou, Houston; James E. Ponder, Cat Spring, and Graham S. Tubbs, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 11, 1979, Ser. No. 83,702
Int. Cl.[3] H01L *21/265, 21/225*
U.S. Cl. 29—571 4 Claims

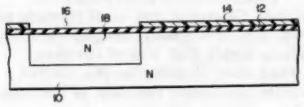


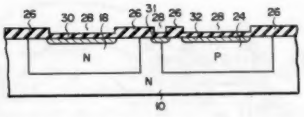
1. A method of making an insulated gate field effect transistor and a cross-over connection in an integrated circuit comprising the steps of:
- (a) selectively growing thick field oxide using an oxidation mask to provide an enclosed surface area on said face for the transistor and a defined area for the cross-over connection,
- (b) introducing N-type impurity into said defined area to produce a conductive region and into the enclosed surface area to produce source and drain regions of an N-channel transistor leaving a space between said source and drain regions to create a channel,
- (c) depositing a layer of conductive material on said face over a thin gate insulator and patterning the conductive material to provide a gate of an N-channel transistor in said enclosed surface area in the space between the source and drain regions but leaving a gap between such gate and source and drain regions, the conductive material after patterning also extending across said conductive region,
- (d) and implanting N-type impurity into the enclosed surface area, self-aligned with said gate, adjacent said source and drain regions, to bridge said gaps.

4,280,272
METHOD FOR PREPARING COMPLEMENTARY SEMICONDUCTOR DEVICE

Hideharu Egawa, Tokyo; Koji Matsuki, Yokohama, and Yasoji Suzuki, Kanagawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 922,192, Jul. 5, 1978, Pat. No. 4,209,797.
This application Oct. 17, 1979, Ser. No. 85,595
Claims priority, application Japan, Jul. 4, 1977, 52-79045
Int. Cl.[3] H01L *21/22, 21/265*
U.S. Cl. 29—571 1 Claim





1. A method for manufacturing a complementary semiconductor device comprising:

forming P- and N-type semiconductor regions in a semiconductor substrate of one conductivity type having a low impurity concentration;

forming impurity layers by doping the same conductivity type impurity into predetermined portions of said P- and N-type semiconductor regions;

forming gate regions to partially cover each of the impurity layers, said gate regions including polycrystalline silicon layers of the same conductivity type; and

simultaneously forming source and drain regions in the respective P- and N-type semiconductor regions to form N- and P-channel type field effect transistors

wherein said impurity layer is formed by doping that amount of impurity which is enough to control the threshold voltages of the N- and P-channel type transistors to a desired level.

4,280,273
MANUFACTURE OF MONOLITHIC LED ARRAYS FOR ELECTROLUMINESCENT DISPLAY DEVICES

Vera M. Vincent, Hatch End, England, assignor to The General Electric Company Limited, London, England

Filed Nov. 7, 1979, Ser. No. 91,980
Claims priority, application United Kingdom, Nov. 20, 1978, 45300/78
Int. Cl.[3] H01L *21/302, 21/316*
U.S. Cl. 29—577 R 7 Claims

1. A process for the manufacture of a monolithic array of light-emitting semiconductor diodes, for an electroluminescent display device, which includes the steps of providing a slice of n-type semiconductor material, forming a plurality of discrete regions of p-type semiconductor material in the said slice by diffusing p-type material into the front surface of the slice, to delineate individual diode areas, forming individual metal contacts on the surfaces of said p-type regions and connecting said contacts together in groups as required for addressing the array, forming at least one isolation channel through the n-type slice for electrically isolating portions of the array from one another, forming at least one metal contact on a surface of the n-type region of each of said mutually isolated portions, and bonding the back surface of the structure so formed to an insulating substrate, wherein

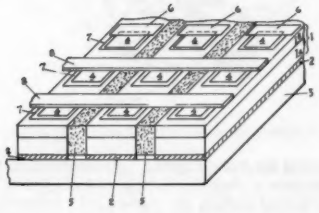
each said isolation channel is formed from the front surface of the slice of semiconductor material through a part, being at least half, of the thickness of the slice,

and which process includes the additional steps of

(a) filling each said channel with a suspension of glass particles in a liquid medium,

(b) removing the liquid, and

(c) heating the slice to a sufficiently high temperature to cause the glass particles to sinter so as to form a glass frit contained in each channel and bonded to the semiconductor material on each side of each channel,



(d) said additional steps being carried out successively for the number of times required to fill each channel completely with said glass frit,

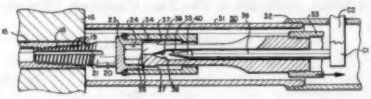
(e) and subsequently to the filling of each channel with said glass frit mechanically removing n-type material from the back of the slice until the glass frit in each channel in exposed at the back surface of the slice, so that the remaining regions of n-type material are isolated from one another by the glass frit,

the formation of each channel and filling thereof with said glass frit being carried out before the formation of the said contacts on the p-type and n-type regions of the slice.

4,280,274
TUBE EXTRACTING APPARATUS

Burt Filer, New Hope, Pa., assignor to Sandra Lee Filer, New Hope, Pa.

Filed Jan. 31, 1980, Ser. No. 117,309
Int. Cl.[3] B23P *19/00*
U.S. Cl. 29—726 9 Claims



1. Tube extracting apparatus for extracting a tube from a tube sheet comprising

a dart having a shank and a tapered end extending therefrom in axial alignment,

said tapered end being provided with threads for internal engagement in a tube to be extracted, p1 said tapered end having longitudinal flutes for facilitating insertion of said threaded tapered end,

said shank opposite said tapered end having an enlarged head,

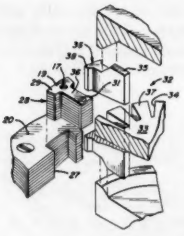
said head opposite said shank having a socket axially aligned with said shank and being provided with internal driving surfaces for rotation of said threaded tapered end into the tube to be extracted.

4,280,275

APPARATUS FOR LAMINATED CORE MANUFACTURE

Yoshiaki Mitsui, Kitakyushu, Japan, assignor to Mitsui Mfg. Co., Ltd., Kitakyushu, Japan

Division of Ser. No. 819,480, Jul. 27, 1977, Pat. No. 4,149,309.
This application Apr. 16, 1979, Ser. No. 30,445
Int. Cl.[3] H02K *15/08*
U.S. Cl. 29—732 2 Claims



1. Apparatus for manufacturing a dynamoelectric machine wound core from a plurality of stacks of teeth having a shank portion and a head portion, and stacked yoke laminations each having an annular array of radially inwardly opening recesses, said stacked teeth being arranged in an annular array to define an annular tooth core arrangement having a plurality of winding slots, said stacked yoke laminations defining an annular yoke core, said apparatus comprising

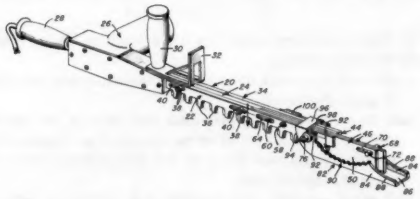
jig means defining a core bar and locking means removably associated with said core bar for temporarily retaining said tooth core assembly on said core bar with said stacked teeth, held accurately in annularly spaced relationship to define therebetween an annular array of winding slots in which a dynamoelectric winding may be wound to define a wound tooth core assembly constructed to be disposed within said yoke core with the head portion of said teeth of the tooth core assembly received in said yoke core recesses to define the dynamoelectric machine core, said jig means further including camming members for urging the stacked teeth radially inwardly into engagement with the core bar to provide the desired accurate annular spaced relationship for receiving said dynamoelectric winding in said tooth core assembly slots.

4,280,276

RECIPROCATING CUTTER

Robert C. Comer, Hopkins, and Thomas F. Kruzel, Minneapolis, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jan. 18, 1980, Ser. No. 113,206
Int. Cl.[3] B25F *3/00*; B27B *11/10*
U.S. Cl. 30—144 26 Claims



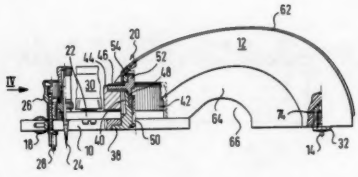
1. In a reciprocating cutter, a support, a pair of parallel laterally adjacent trimmer blades, each of said trimmer blades having a proximal end, a distal end, inner and outer faces, and opposed longitudinal edges, means mounting said trimmer blades on said support for opposite reciprocating movement relative to each other, one of said longitudinal edges constituting a working edge and including shearing knives therealong, a pair of saw blades generally coplanar with and rigid with said trimmer blades for reciprocating movement therewith, each of said saw blades having a proximal end, a distal end, inner and outer faces, and opposed longitudinal edges, one of the longitudinal edges of each saw blade constituting a working edge and having saw teeth defined therealong.

4,280,277

INSCRIPTION INSTRUMENT

Harald Koelichen, Geretsried, and Adolf Deutsch, Königsdorf, both of Fed. Rep. of Germany, assignors to Standardgraph Filler & Fiebig GmbH, Fed. Rep. of Germany

Filed Mar. 17, 1980, Ser. No. 130,962
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916731
Int. Cl.[3] B43L *13/10*
U.S. Cl. 33—23 D 10 Claims



1. An inscription instrument, comprising:

a writing arm; a writing implement supported on the writing arm; a tracing pin supported on the writing arm and which can be inserted into a guide groove for tracing the groove; the writing implement and tracing pin being spaced apart along the writing arm;

a sensing arm extending from the writing arm, the sensing arm being fixable at a plurality of relative positions with respect to the writing arm; a clamping head located at the writing arm and at the sensing arm for clamping the sensing arm at its various positions with respect to the writing arm; a sensing pin on the sensing arm for sensing characters, or the like, defined in a stencil, or the like;

the writing arm being formed as a grippable body between the clamping head and the tracing pin; the grippable body having an upwardly, convexly curved form adapted to the ball of a user's thumb; the convexly curved form including a more steeply curved portion curving down toward the tracing pin, a more flatly curved upper and front portion curving down toward the clamping head and corresponding to the form of the ball of a user's thumb, and a boundary curved portion between the two downwardly curving portions of the curved form; a finger grip recess at the lower side of the grip body;

a guide grip located on the sensing arm, the guide grip being generally flat in shape and being upstanding from the sensing arm and being rotatable on the sensing arm about an axis generally perpendicular to the direction of extension of the sensing arm.

4,280,278

APPARATUS FOR INDICATING INSIDE DIMENSIONS

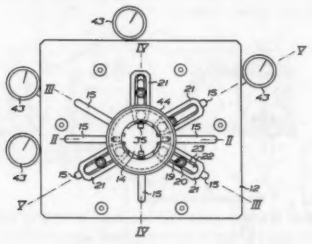
Lars Ö Forsman, Lindögatan 1, S-253 72 Helsingborg, Sweden

Filed Jul. 10, 1979, Ser. No. 118,801
Int. Cl.[3] G01B *5/12*
U.S. Cl. 33—178 R 9 Claims

1. An apparatus for indicating dimensions of an object to be measured, comprising:

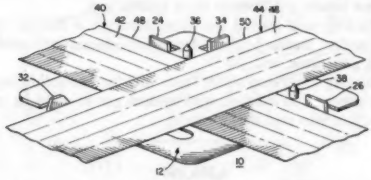
(a) a base plate;

(b) a supporting plate for supporting the object to be measured and positioned above said base plate;
(c) a plurality of slotted guides on said supporting plate and extending radially from its center;
(d) a least one pair of aligned rails mounted on said base plate and displaceable with respect to each other and being positioned in alignment with at least one of said slotted guides;
(e) a plurality of measuring arms mounted on said rails and



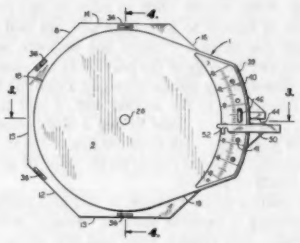
extending through said slotted guides at preselected locations therealong;
(f) support means mounted on said support plate for securing said object to be measured; and
(g) indicating means for indicating the dimensions to be measured, the indicating means being operatively connected to said at least one pair of rails, so that when said measuring arms are positioned in predetermined relationship to said object to be measured, said indicating means will indicate the dimension to be measured.

4,280,279
ALIGNMENT TOOL
Michael A. Grundfest, Forest Hills, N.Y., assignor to Thomas & Betts Corporation, Raritan, N.J.
Filed Aug. 30, 1979, Ser. No. 71,274
Int. Cl.³ G01B *3/00*
U.S. Cl. 33—180 R **10 Claims**



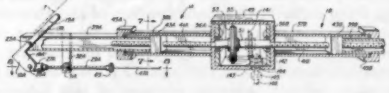
1. An alignment tool for aligning selected conductors of a first multiconductor flat cable with selected conductors of an overlapping second multiconductor flat cable comprising: a base plate having a cable contact surface; first stop means projecting from said surface of said base plate to engage a first edge of a first multiconductor flat cable and align same with respect to said base plate; second stop means projecting from said surface of said base plate to engage a first edge of an overlapping second multiconductor flat cable; and guide means on said surface defining mutually intersecting paths for said first and second cables, each such paths extending beyond the point of intersection and being congruent with one of said first and second stop means to align selected conductors of said overlapping second flat cable in a fixed angular orientation with selected conductors of said first flat cable in a fixed angular orientation.

4,280,280
RADIUS PLATE STRUCTURE
Leonard F. Eck, and Lyle Horgen, both of McPherson, Kans., assignors to Kansas Jack, Inc., McPherson, Kans.
Filed Sep. 21, 1979, Ser. No. 77,647
Int. Cl.³ G01B *5/28*
U.S. Cl. 33—203.12 **5 Claims**



1. A radius plate structure for use in aligning a vehicle wheel positioned thereon and comprising:
(a) a bottom plate member having a front portion;
(b) an upper plate member having front and rear portions and positioned in overlying relation to said bottom plate member;
(c) connecting means extending between said bottom plate member and said upper plate member and including an elongate slot in one of said bottom and upper plate members and an axial pin extending from the other of said bottom and upper plate members permitting full rotational movement while limiting translational movement to only from front and rear of said upper plate member relative to said bottom plate member;
(d) bearing means situated between said bottom plate member and said upper plate member and permitting smooth rotational and translational movement of said upper plate member on said bottom plate member; and
(e) rotation stopping means including a pin member detachably engaged with one of a plurality of apertures extending through one of said bottom and upper plate members and an elongate opening in the other of said bottom and upper plate members and colinearly aligned with said elongate slot, said aperatures corresponding to a plurality of selected radii of said upper plate member from said axial pin; said rotation stopping means selectively preventing rotational movement at a selected amount of rotation of said upper plate member relative to said bottom plate member and permitting only front to rear translational movement at said selected amount of rotation.

4,280,281
REMOTELY ADJUSTABLE SIGHTING DEVICE FOR TRACTORS
B. Lynn Gerber, 6286 E. Catalina Dr., Scottsdale, Ariz. 85251
Filed Dec. 3, 1979, Ser. No. 99,526
Int. Cl.³ G01C *15/00*
U.S. Cl. 33—264 **12 Claims**



1. A sighting apparatus attachable to a tractor to enable the driver of the tractor to precisely align the tractor with swaths or furrows previously cut in a field by a towed farming implement, said sighting apparatus comprising in combination:
a. a first extension arm for extending outwardly a variable

distance from a first point of the tractor on which said sighting apparatus is attached to the tractor, said first extension arm having first and second ends;

b. mounting means attached to the first end of said extension arm for attaching said extension arm to said first point of the tractor;

c. first sighting means connected to the second end of said first extension arm for effecting visual checking of alignment of the tractor with an edge of said previously cut swath or furrow to determine whether said first sighting means lies along a straight line between an eye of the driver and the edge of the previously cut swath or furrow, said first sighting means including a sighting blade pivotably connected to the second end of said first extension arm, said sighting blade having a blade edge for simultaneous alignment with both the eye of the driver and two substantially spaced points on the edge of said previously cut swath or furrow;

d. first control means coupled to said first extension arm for controlling a variable distance through which said first extension arm extends from said first point, a portion of said first control means being located sufficiently close to a driver's seat of the tractor to enable the driver to operate said first control means while the driver is in a normal driving position; and

e. second control means coupled to said first sighting means for effecting pivoting of said sighting blade to precisely align two spaced points on said blade edge with the eye of the driver and respective ones of both of said substantially spaced points on the edge of said previously cut swath or furrow.

4,280,282

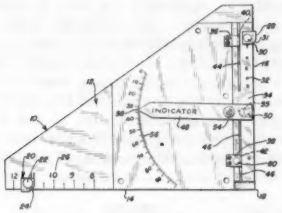
TEMPLATE FOR STAIRWAY CONSTRUCTION AND THE LIKE

Patrick Wright, Albuquerque, N. Mex., assignor to PAJ Corporation, N. Mex.

Continuation-in-part of Ser. No. 951,347, Oct. 16, 1978, abandoned. This application Oct. 29, 1979, Ser. No. 88,960

Int. Cl.³ B43L *13/00*

U.S. Cl. 33—427 **5 Claims**



1. A template for measuring and scribing tread and riser lines for the construction of a stairway, which comprises: a plate member defining first and second straight edges defining a square corner, first movable stop means carried by said plate member on said first edge, and second movable stop means carried by said plate member on said second edge, said second edge being defined by a separate portion of said plate member carried by said plate member and movable along a path of travel parallel to said second edge; and fulcrum arm means pivotally attached to both said separate portion and the rest of the plate member, whereby pivoting of said fulcrum arm means moves said separate portion and second stop means to predetermined positions along said path of travel, whereby the distances between the respective stop means along the straight edges from said square corner may be adjusted, and the resulting adjusted template may be used to scribe a tread and riser lines of predetermined length.

4,280,283

METHOD AND DEVICE FOR THE OPERATION OF A HOT GAS GENERATOR WITHIN A DRYER

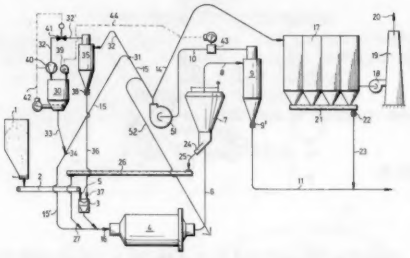
Jakob Ansen; Helmut Duill, both of Cologne, and Heinz Fasbender, Krefeld, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,479

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852164

Int. Cl.³ F26B *3/10*

U.S. Cl. 34—10 **6 Claims**



1. A method of operating a grinding dryer installation for pulverizing and drying solid particles, said installation comprising a mill element, a solids separator, and a dryer system including a circulation blower, a gas circulation system for conducting system gas in combination with said solid particles to be dried and recycling a return gas flow, and a hot gas generator, said method comprising:

mixing raw solid particles with system gas,

introducing system gas mixed with solid particles into said milling element,

passing said mixture from said mill element into said solids separator,

removing system gas from said solids separator as return gas flow,

branching off a part of said return gas flow from a main return gas flow,

passing said partial gas flow into said hot gas generator to serve as secondary air flow therein,

introducing hot gases from said hot gas generator into said main return gas flow to form system gas,

conducting said partial gas flow through a further solids separator means prior to being introduced into said hot gas generator, and

conducting separated solids from said further solids separator means into mixture with system gas prior to its introduction into said mill element.

4,280,284

CLOSED CONDITIONING SYSTEM FOR PEELER LOGS

Elmer F. Guthrie, Bellevue, and Lennart A. Lundberg, Seattle, both of Wash., assignors to A. H. Lundberg Associates, Inc., Mercer Island, Wash.

Filed May 5, 1980, Ser. No. 146,444

Int. Cl.³ F26B *19/00*

U.S. Cl. 34—60 **8 Claims**

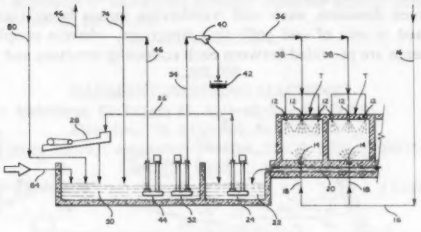
1. In a closed water and steam conditioning system for peeler log conditioning tunnels including a steam source, the improvements comprising:

(a) an evaporator means having heat exchange and vapor head portions,

(b) supply and return lines for connecting said steam source to the heat exchange portion of said evaporator so that steam supplied to said evaporator is returned to said steam source as clean condensate,

(c) sump means for receiving dirty condensate from said conditioning tunnels, said sump means including first

pump means connected to and for directing dirty condensate to said conditioning tunnels for spraying onto peeler logs in said tunnels, and also having second pump means connected to and for cycling dirty condensate to said evaporator where it is vaporized to steam by heat in said heat exchange portion and directed to the vapor head portion,



(d) steam line means in said conditioning tunnels interconnected with the vapor head portion of said evaporator for introducing them into said tunnels,

(e) means for directing dirty condensate from said tunnels to said sump means, and

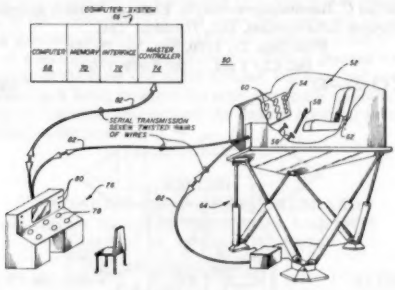
(f) chemical storage and pumping means for directing preselected and controlled amounts of chemical to said sump means for maintaining a desired pH reading in said sump means.

4,280,285

SIMULATOR COMPLEX DATA TRANSMISSION SYSTEM HAVING SELF-TESTING CAPABILITIES

Robert N. Haas, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed May 9, 1977, Ser. No. 795,301
Int. Cl.[3] G09B *9/08*
U.S. Cl. 434—30 **10 Claims**



1. A computer controlled data transmission system for use with a simulator complex which serially transmits digital information originally occuring in one of many forms, including discrete form, digital form and analog form, between data transmission circuitry and a multiplicity of widely spaced peripheral units, said system comprising: a controlling computer for monitoring input information in the form of digital data indicative of the operation of widely spaced peripheral units and for providing output information to control said operation, said output information including digital data for controlling the operation of said peripheral units, addressing digital data for identifying the peripheral unit to be controlled, and synchronizing digital data, said output information being determined in response to said input data and in accordance with an operational program contained in said computer; reformatting means connected between said controlling computer and said data transmission circuitry for transmitting parallel digital data in both directions between said controlling computer and data transmission circuitry, for reformatting as necessary data transmitted from said controlling computer to said data transmission circuitry, and for reformatting as necessary data transmitted from said data transmission circuitry to said controlling computer to a form acceptable to said controlling computer; data transmission circuitry comprising, master control circuitry connected between said reformatting means and peripheral control circuitry, said master control circuitry comprising, a buffer memory for temporary storage of information transmitted in both directions between said computer and said peripheral control circuitry, a storage memory for storing information relative to the format of information transmitted to and received from said peripheral controlled circuitry, means for converting parallel digital data from said computer means to serial digital data suitable for transmission to said peripheral control circuitry, means for converting serial digital data received from said peripheral control circuitry to parallel digital data for transmission to said controlling computer, and means for controlling the retrieval of information from and storage of information by said buffer and storage memories; peripheral control circuitry connected between said master control circuitry and said peripheral units, said peripheral control circuitry comprising means for determining which serial information transmitted from said master control circuitry is to be received by one of said widely spaced peripheral units, means for converting and conditioning serial information received from said master control circuitry to an electrical command signal in the form necessary for use by said peripheral units and means for converting and conditioning electrical information signals of various format received from said peripheral units to serial digital form for transmission to said master control circuitry, said electrical information signals containing information about the operation of said peripheral units; a primary communication path connecting said master control circuitry to said periphal control circuitry and for carrying information in serial digital format wherein said master control circuitry includes the improvement comprising:

first circuitry for continuously monitoring the accuracy of data transmission between said controlling computer and for determining that such accurately transmitted data is received by the appropriate using peripheral unit; and

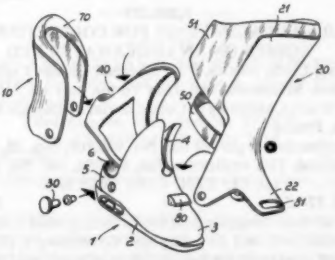
second circuitry for automatically testing on a cyclic basis the performance of the computer comprising said master control circuitry and said peripheral control circuitry.

4,280,286

SKI BOOT

Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Nov. 2, 1979, Ser. No. 90,816
Claims priority, application Italy, Nov. 15, 1978, 29813 1 A/78
Int. Cl.[3] A43B *5/04, 21/00*
U.S. Cl. 36—118 **4 Claims**



1. A ski boot comprising in combination:

(a) a foot portion comprising a substantially rigid shell made

of plastics material; said shell having a toe portion and a heel portion;

(b) a leg portion comprising a rear raised upper and a front raised vamp, said raised upper and raised vamp being made of substantially rigid plastics material, at least said raised vamp having a length dimension with respect to said shell such as to terminate substantially proximate to the skier's knee;

(c) wings integral with said raised vamp laterally thereto for at least in part engaging the skier's leg laterally;

(d) means for pivotally connecting said raised upper and said raised vamp with said shell about a common axis extending substantially perpendicularly to a longitudinal centerline of said shell and lying substantially at the region of the skier's malleolus;

(e) means for engaging said raised upper with said raised vamp to firmly surround the skier's leg;

(f) means on said raised vamp for encircling the skier's leg rear and holding said raised vamp in engagement with the skier's leg at an upper region near to the skier's knee;

(g) means for allowing limited pivotal movement of said raised vamp about said axis.

4,280,287

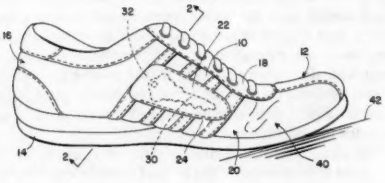
POCKET FOR AN ATHLETIC SHOE

Jerry Gulbransen, 804 Mandana Blvd., Oakland, Calif. 94610

Filed May 21, 1979, Ser. No. 41,062

Int. Cl.³ A43B *23/00, 5/00*

U.S. Cl. 36—136 **6 Claims**



1. A pocket for an athletic shoe comprising:

a. a flat sheet of material including fastening means for removably fastening said entire flat sheet of material to the outer side of an athletic shoe rearward of the normal walking crease of the upper shoe, to form a compartment having an opening located between two sides, one side positioned above the other side, said fastening means comprising hook and pile closure mating elements fastened to the upper of the athletic shoe and generally about the perimeter of the flat sheet of material;

b. a closure flap connected to said flat sheet of material, said closure flap including closure means for sealing said opening of said compartment.

4,280,288

MODULAR DRAGING UNIT FOR COLLECTING SOLID BODIES ON AN UNDERWATER BED

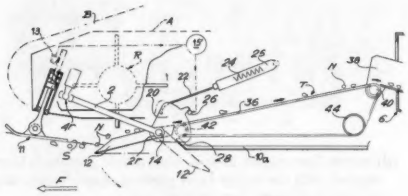
Yves-Paul Corfa, Nantes; Paul Marchal, Gif-sur-Yvette; Victor Roussel, Maintenon, and Jean Vertut, Issy les Moulineaux, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 945,105, Sep. 25, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,846

Int. Cl.³ E21C *45/00;* **E02F** *9/00*

U.S. Cl. 37—54 **15 Claims**

1. A modular dragging unit for collecting solid bodies on an underwater bed, said dragging unit comprising a plurality of collecting structures for individually collecting said solid bodies, said structures being applied against said underwater bed and located side by side at a front edge of said dragging unit, a storage structure for storing said bodies as they are collected, said structure being applied against said underwater bed, means for displacing said collecting and storage structures along said bed in a given direction, said means being connected to the storage structure, a plurality of means for collecting said bodies along said given direction, each said means being rigidly fixed to one of said collecting structures, and a plurality of means for transferring said bodies as they are collected from each collecting means into said storage structure along said given direction, each said transferring means being rigidly fixed to one of said collecting structures, wherein coupling means are provided between each collecting structure and the



storage structure, said coupling means permitting an independent relative movement of each collecting structure with respect to the storage structure and maintaining each collecting structure in a predetermined distance and orientation with respect to said underwater bed at the time of collection of said bodies whatever the position of said storage structure relative to said bed and whatever the variations in profile of the underwater bed, each coupling means between one of said collecting structures and the storage structure comprising at least one link-arm connected to each structure to provide at least two degrees of freedom between said structures.

4,280,289

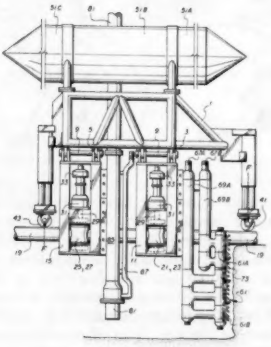
UNDERWATER TRENCHING MACHINE FOR BURYING PIPELINE AND THE LIKE

Christian C. Bassompierre-Sewrin, Embrun, France, assignor to Martech International, Inc., Houston, Tex.

Filed Sep. 27, 1970, Ser. No. 79,358

Int. Cl.³ F16L *1/00;* **E02F** *5/02*

U.S. Cl. 37—63 **7 Claims**



1. In a trenching apparatus for excavating a path in the floor of a body of water for receiving therein a pipeline or the like comprising:

a fore roller means and aft roller means simultaneously or individually adapted for traction engaging contact with the pipeline,

power means coupled to each said roller means for driving

the trenching apparatus along said pipeline until an obstacle thereon is countered by said fore roller means,

remote control means for selectively withdrawing either of said fore or aft roller means from the surface of the pipeline so that the aft roller means drives the trenching apparatus when the fore roller means is withdrawn and the fore roller means drives the trenching apparatus when the aft roller means is withdrawn to thereby enable the trenching apparatus to move over pipeline obstacles without being removed therefrom.

4,280,290

GARMENT PRESSING MACHINE

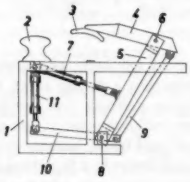
Ake Andersson, Skolvägen 15, Aplared, Sweden 510 53

Filed Dec. 28, 1979, Ser. No. 107,875

Claims priority, application Sweden, Jan. 9, 1979, 7900171

Int. Cl.³ D06F *71/08*

U.S. Cl. 38—31 **1 Claim**



1. A garment and like pressing machine of the kind comprising a frame, a stationary buck supported on the frame and a pressing head moveably supported relative to the buck, means being arranged for moving the head forwardly in vertical registry over the buck and rearwardly away therefrom and further means being arranged for moving the head vertically into and out of pressing contact with the buck, said head being mounted at one end of a double-armed lever, which is pivoted to the upper end of a column, which at its lower end is pivoted to the frame and which is actuated by a first power-operated jack, at the opposite end of said lever the upper end of a link being pivoted, the lower end of which being pivoted to one end of a second double-armed lever, which is pivoted to the frame about the same axle as the column, and a second power-operated jack being arranged for acting upon the opposite end of the second lever remote from the link for applying pressing pressure to the head.

4,280,291

TWO-SIDED PORTABLE SCOREBOARD

Alan D. Maynes, 9619 S. 3100 East, Sandy, Utah 84070

Filed Nov. 15, 1979, Ser. No. 94,740

Int. Cl.³ G09F *9/00*

U.S. Cl. 40—495 **12 Claims**

1. A two-sided scoreboard comprising:

a front plate;

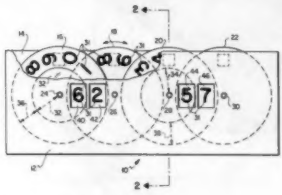
a rear plate coupled to said front plate;

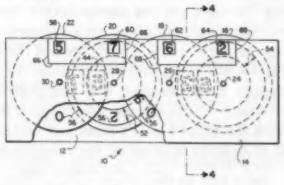
at least two pairs of disks axially mounted at their centers between said front and rear plates, each pair of said disks having a set of scoring symbols selectively placed around the front and rear periphery of each disk, the front sets of said scoring symbols being of a uniform size that is sufficiently large so as to be legibly visible to a person having normal vision who is positioned at least 30 feet away from the front side of said scoreboard, each of said pairs of disks comprising:

a front disk having a radius r of at least five inches, including a transparent center section having a radius approximately equal to r/2, positioned adjacent to said front plate, and

a rear disk having a radius approximately equal to r, positioned adjacent to said rear plate and partially overlapping said front disk such that the center of said second disk is close to the circumferential edge of said front disk;

respective front windows in said front plate for each of said pairs of disks through which a pair of desired scoring symbols may be viewed in a desired sequence, a first symbol in either front window sequence belonging to the front set of scoring symbols placed around the respective rear disk and being viewed through said transparent center section of the respective front disk and through the respective window, and a second symbol in this front window sequence belonging to the front set of scoring symbols placed around said respective front disk and being viewed directly through said respective window, the spacing between said first and second symbols as viewed through said window being no more than the





average width of the symbols belonging to said front set of symbols; and

respective pairs of spaced apart rear windows in said rear plate through each pair of which an equivalent pair of desired scoring symbols may be viewed in the proper sequence and orientation as is viewed through the corresponding front windows, a first symbol in this rear window sequence belonging to the rear set of scoring symbols placed around the respective rear disk and being viewed from the rear side of said scoreboard directly through a left rear window of said respective pair, and a second symbol in this rear window sequence belonging to the rear set of scoring symbols placed around the respective front disk and being viewed from the rear side of said scoreboard directly through a right rear window of said respective pair.

4,280,292

TORSO-AND DISPLAY-SUPPORTABLE PUPPET

Isaac A. Hills, Brooklyn, N.Y., assignor to Animal Toys Plus, Inc., Brooklyn, N.Y.

Filed Aug. 14, 1980, Ser. No. 177,920

Int. Cl.³ G09F *1/08*; A63H *3/14*

U.S. Cl. 40—538 **13 Claims**

1. A puppet supportable on a manipulator's torso, comprising:

(a) a puppet figure having a puppet head and a puppet body connected to the puppet head, said puppet figure bounding an interior cavity which is located within the puppet head and body, and which is dimensioned to permit free insertion of the manipulator's hand and at least a major portion of the manipulator's forearm therein, said puppet

figure also having a pair of soft, upper puppet limbs connected to and extending from the puppet body for a distance sufficient for extending behind the manipulator's neck region when the puppet is positioned in embracing relation generally adjacent the manipulator's chest, and further having a pair of soft, lower puppet limbs connected to and extending from the puppet body for a distance sufficient for extending behind the manipulator's waist region when the puppet is positioned in embracing relation generally adjacent the manipulator's chest; and

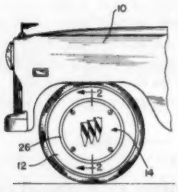
(b) torso-supporting means on the puppet figure, for supporting the same on the manipulator's torso, said torso-supporting means including neck-supporting means for securing the upper portion limbs around the manipulator's neck region, and waist-supporting means for securing the lower puppet limbs around the manipulator's waist region, whereby the torso-supported puppet is manipulatable by both the manipulator's hand and forearm while mounted in embracing relation on the manipulator's torso.

4,280,293

STATIONARY DISPLAY MEMBER FOR A ROTATING HUB CAP

Eugene N. Kovalenko, 461 Peralta, Long Beach, Calif. 90803, and John G. Bowen, 11521 Heathcliff Dr., Santa Ana, Calif. 92705

Filed Dec. 26, 1979, Ser. No. 106,703
Int. Cl.³ G09F *21/04*
U.S. Cl. 40—587 **8 Claims**



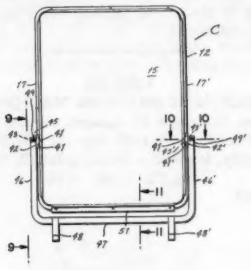
1. A non-rotating assembly for a rotatable member comprising: a disc-like member forming an internal chamber for receiving a flowable material; bearing means mounting the disc-like member on the rotatable member in coaxial relationship with the axis of rotation thereof to permit the disc-like member to be freely rotatable about the axis of rotation; a quantity of flowable material received in the chamber to act as a counterweight so as to prevent the disc-like member from rotating as the rotatable member rotates; and damping means mounted in the chamber coacting with the flowable material therein to prevent any tendency for the member to oscillate about the axis of rotation of the rotatable member.

4,280,294

UNIVERSAL SIGN

Keith S. Eckberg, II, St. Louis County, Mo., assignor to Stout Industries, Inc., St. Louis, Mo.

Filed Apr. 30, 1980, Ser. No. 145,030
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—606 **17 Claims**



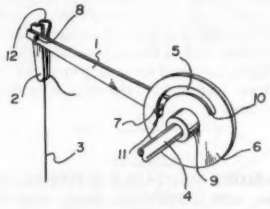
1. A sign of universal mounting character for carrying a display, said sign comprising a display sheet, a frame having a plurality of components defining top and bottom and side portions of said frame, said components being joined together at joints at the sides of said frame, means associated with said joints for mounting said frame in a first display configuration, means respectively associated with said top and bottom portions for mounting said frame in a second display configuration, and means for securing said sheet to said frame.

4,280,295

JIG-O-MATIC

Philip Hoeving, 613 Elgin St., N.E., and Michael Litovich, 29 Ash Dr., both of Weyburn, Saskatchewan, Canada

Filed Jan. 25, 1980, Ser. No. 115,512
Claims priority, application Canada, Oct. 30, 1979, 338706
Int. Cl.³ A01K *87/00*
U.S. Cl. 43—19.2 **1 Claim**



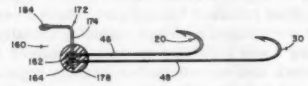
1. Apparatus for providing movement to a fishing line comprising a shaft having first and second ends adapted to be attached at said first end to a motor for rotation thereby, a plate fixed to said shaft at said second end and adapted to rotate about the axis of said shaft, an arm pivotally attached to said plate for pivotal movement about the axis of the shaft in a plane parallel to the plane of said plate, said plate including arm engaging means thereon to engage said arm to provide limits to the pivotal movement of said arm relative to said plate, said arm including a clip fastening means pivotally mounted thereon for holding a fishing line, whereby as the plate is rotated said arm engaging means will initially cause the arm to rotate at the same rotational speed as the plate causing relatively slow upward movement of the fishing line following which the arm is allowed to drop under the influence of gravity to thereby cause said fishing line to sink rapidly, said arm engaging means comprising a pair of spaced perpendicularly extending pins mounted on said plate adapted to engage said arm to limit pivotal movement thereof relative to said plate.

4,280,296

TANDEM FISHHOOK

Donald C. Volenec, 5042 Frederick St., Omaha, Nebr. 68106

Filed Mar. 19, 1979, Ser. No. 21,431
Int. Cl.³ A01K *83/00*
U.S. Cl. 43—44.81 **5 Claims**



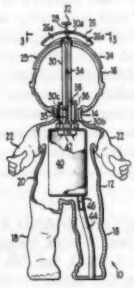
1. A tandem fish hook assembly comprising a forward hook and a rearward hook, said hooks each having two opposite sides connected by a curved portion with a convex side and a center, one of said sides having a barbed end having a forward-pointing tip, the other of said sides of each of said hooks defining an elongated shank extending in a direction opposite to the convex side of said curved portion, said shanks being alongside each other, means rigidly interconnecting said shanks, said curved portions both extending upwardly from said shanks at the same time, and at said same time the centers of said curved portions being disposed on opposite sides of a reference plane extending along said shanks and substantially through a center of the area in which said shanks are disposed, said forward-pointing tip of said forward hook being disposed a substantial distance forwardly of said forward-pointing tip of said rearward hook, said means rigidly interconnecting said shanks comprising a weighting member of substantially greater weight in proportion to its forward-to-rearward dimension than the combined weight of said two shanks along an equal forward-to-rearward dimension along the two of said shanks, the forward ends of said hook shanks terminating in aligned eyes inside said weighting member, a wire extending through said aligned eyes, and said wire having an eye thereon external of said weighting member.

4,280,297

DOLL WITH WATER ACTIVATED SHOWER CAP

Allison W. Katzman, Chicago; Harry Disko, S. Barrington, and Eugene Jaworski, Park Ridge, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 3, 1979, Ser. No. 99,311
Int. Cl.³ A63H *3/06*
U.S. Cl. 46—41 **20 Claims**



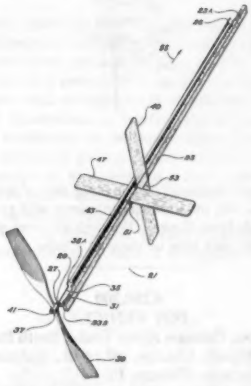
1. A doll having a hollow body and a head,
a cap element secured on top of said head for limited movement toward and away from said head,
a liquid reservoir in said hollow body having a flexible wall,
a conduit for said liquid extending from said reservoir and passing through said head with an outlet adjacent said cap element for directing a stream of liquid through space external to said doll to impinge against said cap element to move the same away from said head when said flexible wall is compressed inwardly.

4,280,298

TOY MODEL FLYING MACHINE

Walter P. B. Kulzer, 7309 Coronet Ave., Fort Worth, Tex. 76118

Filed Oct. 22, 1979, Ser. No. 87,095
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—78 **5 Claims**



1. A model airplane, comprising:
a substantially straight elongated body having a first end and a second opposite end,
two thin elongated fins adapted to be removably attached to said body at positions intermediate said first and second ends such that they form a cross with their thin planes being about 90 degrees apart and with their lengths being generally perpendicular to the length of said body,
a propeller mounted for rotation at said first end, and
elastic means coupled to said propeller and to said body at a position between said two fins and said second end of said body,
said elastic means being capable of rotating said propeller for causing said model airplane to fly,
said two fins being adapted to be removably attached to said body such that one fin is located its full width closer to said first end of said body than said other fin.

4,280,299

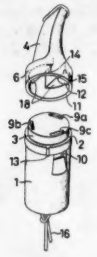
WHISTLE

Toshio Oka, Osaka, Japan, assignor to Zenzaburo Kawanishi, Osaka, Japan

Filed Nov. 8, 1979, Ser. No. 92,495
Claims priority, application Japan, May 10, 1979, 54-62776[U]
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—179 **1 Claim**

1. A whistle, comprising:
a body having a plurality of separate axially extending cavities each respectively having different depths and having an opening opening out of the top of said body and further having an aperture midway of their length; and
a mouthpiece having at least one hole extending generally axially out of one end of said mouthpiece, the other end of said hole having a size covering the top of said body for communicating with said openings in the top of said body, said mouthpiece being fitted in air tight engagement on said body, said mouthpiece having a protuberance therein projecting toward the top of said body and engaging the top of said body when said mouthpiece is fitted on said body, said protuberance extending in the circumferential

direction of said mouthpiece a distance sufficient to cover only one of said openings and less than the distance between said openings, whereby said mouthpiece can be positioned on said body with said protuberance covering



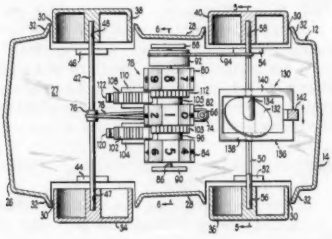
none of said openings or covering one of said openings so that air blown into said mouthpiece will produce one of four sounds from flowing through all three of said cavities or through only two of them at a time.

4,280,300

TOY VEHICLE

Ralph J. Kulesza, Chicago; Harry Disko, South Barrington, and James G. Thibault, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,808
Int. Cl.³ A63H *11/10*
U.S. Cl. 46—204 **11 Claims**



1. A toy vehicle such as an automobile or the like, comprising:

a vehicle frame;

a plurality of wheels rotatably mounted on said frame to allow said vehicle to travel over a surface; and

an automatically flashing turn signal device including a plate member slidably mounted on said body, indicia on said plate member indicating a signal, and means for repeatedly moving said plate to a signaling position including a disc coupled to at least one of said wheels and mounted at an angle to a longitudinal axis of said body and a spring biasing said plate member to a nonsignaling position.

4,280,301

MATERIAL HANDLING SYSTEM AND METHOD

Donald E. Herzog, and Larry Thomas, both of St. Louis, Mo., assignors to St. Louis Conveyor Company, Inc., St. Louis, Mo.

Continuation of Ser. No. 879,471, Feb. 21, 1978, abandoned.
This application Nov. 26, 1979, Ser. No. 97,059
Int. Cl.³ B26B *1/00*
U.S. Cl. 51—5 R **11 Claims**

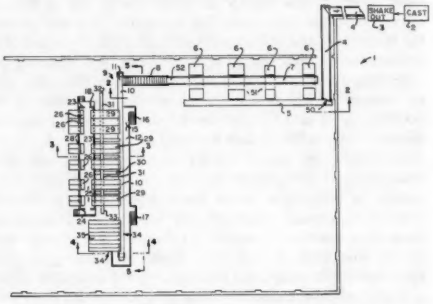
1. A material handling system for gray iron foundries providing generally continuous work flow, comprising:

means for conveying and accumulating material at an elevated temperature along a single plane reference, said conveying and accumulating means permitting the material to cool to a temperature suitable for material handling by humans;

means for transferring said material to a first work station along said single plane reference;

means for conveying said material from said first work station to a first location elevated with respect to said single plane reference but environmentally a part thereof;

a second work station enclosure including a totally enclosed finishing room providing an area segregated from said first work station, and environmentally separate therefrom, said second work station having a plurality of inlets and a plurality of outlets operatively associated with the totally enclosed finishing room, said inlet and outlet plurality corresponding to a plurality of personnel work stations within said totally enclosed finishing room so that work on said material may be conducted within said finishing room, such work being conducted in the environmentally separate area provided by said finishing room,



said inlets being arranged at an elevated location approximately equal to said elevated first location, and said outlets being at a lower elevation than said first elevated location;

means for conveying said material from said elevated first location and for connecting said elevated first location with said second work station enclosure including means for gravity feeding material from said last mentioned conveying means to said work station enclosure at said plurality of inlets;

means for gravity feeding material from said second work station enclosure at said plurality of outlets; and

means at the end of said conveying and connecting means for collecting and accumulating any material not passing through said second work station enclosure wherein work enters said material handling system at said conveying and accumulating material means and leaves said material handling system at one of said second work station enclosure gravity feeding means and said last mentioned collecting and accumulating means.

4,280,302

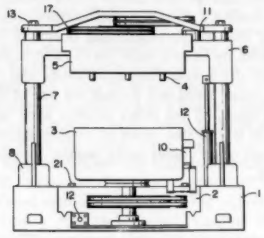
GRINDING METHOD AND APPARATUS

Ietatsu Ohno, 1-2, 1-chome, Kasuya, Setagaya-ku, Tokyo, Japan

Filed Nov. 6, 1978, Ser. No. 957,673
Int. Cl.³ B24B *31/08*
U.S. Cl. 51—7 **6 Claims**

1. A grinding method comprising in combination, filling a tank rotatable about a central axis with grinding materials, extending a plurality of rotatable spindle shafts into said tank displaced from said central axis and rotatable about axes parallel to the central axis, rotating work products to be ground on said spindle shafts and entered in said tank to contact said grinding materials, sealing the tank with a lid sealed thereon by a packing seal and adapted to rotate with the tank and thereby

prevent loss of said grinding materials therein when subjected to flow patterns caused by rotation of the work products and high grinding pressures attained by centrifugal force afforded by the rotatable tank, and relatively rotating the work product



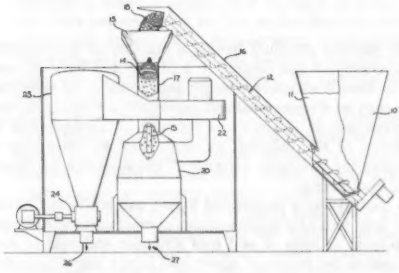
on the spindle shafts and the grinding materials by rotating the tank and its sealed lid to achieve a grinding pressure within the tank bearing upon the work product as a result of flow of the grinding materials about the work product within the sealed tank.

4,280,303

PLASTIC PELLET CLEANING APPARATUS AND METHOD FOR OPTICAL LENSE MOLDING

Hermann Weber, 5506 Beckford Ave., Tarzana, Calif. 91356

Filed May 1, 1980, Ser. No. 145,821
Int. Cl.³ B24B *31/00*
U.S. Cl. 51—163.1 **11 Claims**



1. An apparatus for preparing plastic pellets for optical lense molding comprising:

(a) mechanical action means for imparting mechanical action to said plastic pellets to dislodge burrs on said pellets;

(b) ionization means for removing static charge from said plastic pellets coupled to receive said plastic pellets from said mechanical action means;

(c) air separating means for removing said burrs from said plastic pellets coupled to receive said plastic pellets from said ionization means;

whereby said plastic pellets are provided which are substantially free of said burrs.

4,280,304

DEBURRING METHOD FOR WORKPIECES

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Tipton, Nagoya, Japan

Filed Dec. 22, 1978, Ser. No. 972,487
Claims priority, application Japan, Jan. 25, 1978, 53-7723
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—315 **4 Claims**

1. A method for deburring workpieces by the combined operations of finishing by rotary tools and gyro-finishing, said method comprising:

providing an intermittently driven carrying means, at least one deburring apparatus having rotary tools and positioned adjacent said carrying means, and a gyro-finishing apparatus located downstream of said deburring apparatus with respect to the direction of movement of said carrying means;

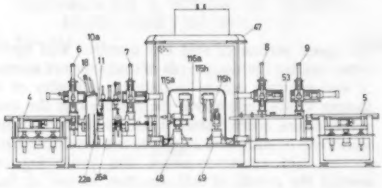
positioning a plurality of workpieces on said carrying means at locations spaced at regular intervals along said direction;

intermittently operating said carrying means to alternately move distances or pitches equal to said regular intervals during movement periods of time and to be stationary during stationary periods of time, and to thereby intermittently move said workpieces in said direction; and

during such intermittent movement successively subjecting each said workpiece to successive operations comprising:

during a stationary period of time transferring a selected said workpiece at a deburring inlet position from the respective said location thereof at said carrying means to said deburring apparatus;

at said deburring apparatus, during a stationary period of time, subjecting said selected workpiece to a deburring



operation by rotating and reciprocating said rotary tools on surfaces of said selected workpiece to be deburred, to thus form a semi-finished workpiece;

returning said semi-finished workpiece to the original respective location thereof with respect to the remainder of said workpieces which has moved forward at least one pitch in said direction, while moving a succeeding said workpiece to said deburring inlet position;

during a stationary period of time transferring said semi-finished workpiece from said original respective location to said gyro-finishing apparatus at an inlet thereof, while transferring a succeeding workpiece from the original respective location thereof to said deburring apparatus;

chucking said semi-finished workpiece in a rotary spindle of said gyro-finishing apparatus, and during stationary periods of time subjecting the thus chucked workpiece to a gyro-finishing operation by rotating said chucked workpiece while being submerged in abrasive media of said gyro-finishing apparatus, to thus form a finished workpiece; and

returning said finished workpiece from said gyro-finishing apparatus back to said carrying means, while transferring a succeeding semi-finished workpiece to said gyro-finishing apparatus at said inlet thereof.

4,280,305

ROOF FLASHINGS FOR USE WITH SOLAR COLLECTOR

Duane D. Logsdon, Fullerton, Calif., assignor to The Logsdon Foundation, Stanton, Calif.

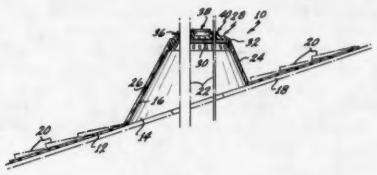
Continuation-in-part of Ser. No. 42,216, May 24, 1979, which is a continuation-in-part of Ser. No. 883,420, Mar. 6, 1978, Pat. No. 4,160,347. This application Oct. 29, 1979, Ser. No. 89,614
Int. Cl.³ E04D *1/36*
U.S. Cl. 52—58 **10 Claims**

1. A roof flashing structure used to form a seal between a

roof and at least one tube or wire extending through the roof, the flashing structure of the type including a generally flat plate formed of a rigid material and having a centralized opening and an upstanding tapered housing integrally formed with said flat plate from said rigid material and extending upwardly from said flat plate about said centralized opening such that the centralized opening in the plate forms the lowermost opening in the housing which comprises:

a resilient elastomeric sealing means having a generally flat circular top member, said flat circular top member including an upper surface and a lower surface, a first interlocking means located on and projecting from the periphery of said top member;

said top member including a plurality of generally circular aperture means extending upwardly from the lower surface of said top member and culminating in an upstanding boss integrally formed with and extending upwardly from



the upper surface of said top member, said upstanding bosses sealing the upper ends of said aperture means, each of said aperture means including a plurality of sealing flanges located one above the other along the length of said aperture means between said lower surface and said sealed end of said aperture means and extending circularly around said aperture means and projecting radially toward the center of said aperture means, at least the upper portion of each of said bosses capable of being severed from said top member unsealing said aperture means, said flanges each being independently capable of engaging with and forming a seal with one of said tube or said wire passed through said unsealed aperture means;

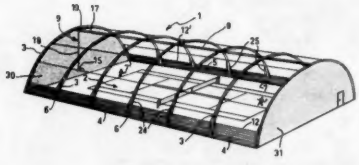
the uppermost periphery of said housing including a second interlocking means, said first interlocking means capable of locking with said second interlocking means locking and maintaining said elastomeric sealing means in the uppermost periphery of said housing.

4,280,306

CONVERTIBLE ENCLOSURE FOR BUILDINGS AND AREAS

Vojin Milinic, 43 rue Charles Floquet, 92500 Rueil Malmaison, France

Filed Jun. 4, 1979, Ser. No. 44,925
Int. Cl.³ E04B *1/12*
U.S. Cl. 52—63 **4 Claims**



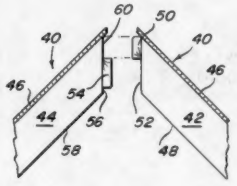
1. A convertible enclosure for buildings and areas, particularly sports areas, comprising a series of identical, parallel arched supporting beams having a ridge line, two closure elements between two supporting beams being able to be extended simultaneously along these supporting beams to extend respectively from two rows of bases of the corresponding supporting beams up to the ridge line of the supporting beams, each of said closure elements comprising a series of purlins arranged to slide on said two supporting beams, parallel to the ridge line thereof, and a canvas fixed to said purlins, of which the width is equal to the gap between the two supporting beams and the length is equal to half that of the supporting beams, these purlins thus being connected together in two's by a portion of this canvas, and means for extending said closure elements comprising a winch, a shaft mounted to rotate adjacent the ridge line of the supporting beams, a flexible cable fixed and wound, by its two ends, on the winch and said shaft, respectively, to drive said shaft in rotation, and two series of other flexible cables fixed and wound, by one of their ends, on said shaft and fixed, by the other of their ends, on a purlin at one of the ends of the two rows of closure elements, respectively, all of said other cables being wound on said shaft in the same direction.

4,280,307

PRE-ENGINEERED CONSTRUCTION SYSTEM UTILIZING PREFABRICATED MEMBERS

Alphonso Griffin, 2625 Hemple St., Chesapeake, Va. 23324

Filed Mar. 14, 1979, Ser. No. 20,338
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—90 **7 Claims**



5. A building structure having a plurality of prefabricated panels assembled and erected in a preselected floor arrangement to form a structure wherein said plurality of assembled panels may be disassembled and reassembled to accommodate and expansion or reduction in the size of configuration arrangement of the building structure without disrupting or destroying the structural integrity of the structure the combination, comprising:

a. a roof having a preselected length and width and having at least two roof panel sections connected to one another to form an apex of said roof structure and held in fixed position by means of upper and lower ridge connector plates which are connected respectively to a plurality of rafter elements of said roof panels to thereby form means of mechanically locking said panels at their adjoining edges regions in fixed interlocking relationship, each of said rafter elements extending the full length of said roof panels and being substantially paralled to one another, each of said rafters having an end remote from said roof apex with a cut-out near a lower end thereof having a pre-engineered and pre-designed configuration to which a key board and a roof panel connector plate is fixedly connected to each rafter at said cut-out to thereby link said rafters together along said preselected width of each of said roof panels to thereby form means for mechanically interconnecting said roof panels to one another section of said building structure;

b. a ceiling having at least two ceiling panel sections connected to one another along one dimension by mechanical means to form a main ceiling structure therefor, a lock board connector and a ceiling band joist connector being fixedly connected along each paralled perimeter edge of said panels along one dimension thereof and perpendicular to one another along an upper ceiling joist edge of said one dimension, said cut-out of said rafter and said key board of said roof form a slot into which said lock board connector

may be fitted in interconnecting fixed relationship with said rafters and said roof panel connector plate when positioned in flush alignment with said ceiling band joist connector to thereby complete an interlocking arrangement between said roof and ceiling sections;

c. a plurality of wall panel sections having horizontal and vertical edges, two of said wall panel sections being connected with one another along their respective vertical edges to form a corner connection, said vertical edge of one of said wall panel sections consists of a vertical bracing stud member connected to a framing stud member in a perpendicular spaced relationship to form a first portion of an interlocking means of a corner connection, said vertical edge of said second wall panel section consists of a vertical framing stud member connected to one surface to a half stud member and on another adjacent perpendicular surface a second half stud member and a strip of structural filler material connected to said second half stud and said framing stud to thereby form an arrangement for receiving said first portion of an interconnecting means of a corner connection to thereby complete said connection;

d. a floor having at least two floor panel sections each having a width and length and an adjoining edge region there between extending the full length of one dimension thereof, said adjoining edges each have a full panel girder member connected to a plurality of substantially parallel joist members along another dimension of said panel, each of said panel girder members and at least two of said joist members having a joist bracing connector plate connected there between to provide mechanical strength at their junction and to provide additional means for interconnecting said floor sections with vertical wall panel sections, a positioning plate, connected to said full panel girder member and extending the full length thereof, each of said positioning plates is connected in an upper of lower position with respect to one another to thereby form an interconnecting arrangement therebetween when placed in fitted spaced relationship to one another to further form at least one structural beam member for support of said walls, ceiling and roof; and

e. a foundation for said building structure for supporting said floor panels which are set on said foundation at preselected locations thereof resting on said structural beam members formed by said floor panels at said adjoining edge regions to thereby provide support for said wall panels connected to said floor along preselected portions of said horizontal edges of said wall panels, said roof and ceiling for said building structure being connected to the horizontal edges of said wall panels remote from said horizontal edges of said wall panels connected to said floor to provide vertical support for said interconnected roof and ceiling panels to complete the erection and assembly of said building structure.

4,280,308

LINTEL

Lennart Svensson, Tallbacken 2, Kungsbacka, Fed. Rep. of Germany 43400

Filed Sep. 6, 1979, Ser. No. 72,636

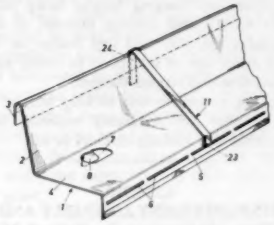
Claims priority, application France, Sep. 8, 1978, 78 25836

Int. Cl.³ E04B *1/00;* E04C *2/08*

U.S. Cl. 52—98 **7 Claims**

1. A lintel for supporting one or more courses of brick or the like at the walling of arches over wall openings, brick facades and the like, and of the type comprising a relatively thin sheet metal profile which is bent to form at least one shank constituting the most load carrying part of the lintel,

each shank being provided with a material weakening comprising a series of slots, perforations, one or several grooves, or a combination thereof extending in the longitudinal direction of the shank and forming a fracture indication when the shank is bent along said material weakening for the purpose of folding back or breaking off the outer portion of said shank when the brickwork has become self-supporting,



said material weakening being so designed that the carrying capacity of the lintel in the plane of the shank is only insignificantly reduced thereby.

4,280,309

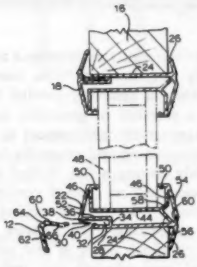
WINDOW FRAME ASSEMBLY

Alfred G. Huelsekopf, R.R. No. 1, Newmarket ,Ontario, Canada

Continuation of Ser. No. 957,922, Nov. 6, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,831

Int. Cl.³ E06B *1/04;* E04C *2/38*

U.S. Cl. 52—212 **2 Claims**



1. A window frame assembly for use in a rectangular window opening which extends from one side of a body such as a door, a wall or the like to the other side thereof comprising:

(a) a preassembled rectangular shaped frame which includes a header member, side rail members and a sill member which are secured to one another and sealed in an end-to-end relationship and arranged and proportioned to fit within a rectangular window opening, each frame member comprising,

(i) a composite transverse wall proportioned to extend between the sides of said body, said composite transverse wall comprising first and second wall panels which extend transversely and are interconnected at first and second side edges of said composite transverse wall to form a substantially rigid structure having a chamber formed inwardly thereof,

(ii) a first flange projecting outwardly from said first wall panel at said first side edge thereof for engagement with said one side of said body to prevent direct removal of said first frame from said opening through said other side,

(iii) window mounting means on said second wall panel extending inwardly therefrom, said window mounting means being adapted to retain at least one window unit within said first frame, and

(iv) a first locking channel formed in said second wall panel, said first locking channel extending longitudinally of and opening at said second side edge of said second wall panel to be engageable from said other side of said body in use, and

(b) a locking rail for each of said members comprising a longitudinally extending second flange and a longitudinally extending locking tongue arranged in an L-shaped configuration, said locking tongue being adapted to be insertable within said locking channel to dispose said second flange opposite said first flange for engagement with said other side of said body to clamp said body between said first and second flanges,

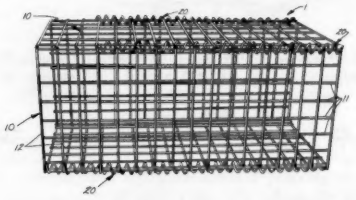
(c) interlocking means on said locking tongue and in said locking channel for releasably securing said locking tongue within said locking channel in use.

4,280,310

HINGED REINFORCEMENT ASSEMBLY AND METHOD

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Filed May 23, 1979, Ser. No. 41,935
Int. Cl.³ E04H *12/18*
U.S. Cl. 52—646 **7 Claims**



1. A welded wire concrete reinforcement assembly comprising: four generally flat sheets of wire reinforcement, each comprising a plurality of generally parallel longitudinal wire strands joined to a plurality of generally parallel transverse strands oriented transversely with respect to said longitudinal strands; hinge means joining said generally flat sheets at their edges; said assembly having a flat, folded configuration for shipping and storage, and an erected configuration wherein said sheets are disposed in a generally rectangular relationship; said hinge means comprising a helical wire coiled about the adjacent edge longitudinal wires in said adjacent sheets of welded wire fabric, and wherein said helical wire is constructed of a material which is sufficiently stiff that it is twisted onto said adjacent longitudinal wires during assembly of said sheets without uncoiling, and is sufficiently bendable that in said erected configuration it is in a crimped condition at various points along its length to hold said reinforcement assembly in its erected condition.

4,280,311

METHOD AND APPARATUS FOR FASTENING A SHEET OF MATERIAL TO A SUPPORT

Donald F. Lockard, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Nov. 8, 1978, Ser. No. 958,772
Int. Cl.³ E04D *1/00, 3/36*
U.S. Cl. 52—748 **4 Claims**

1. A method of fastening sheet material to a support comprising:

positioning a surface of a length of sheet material against a support;

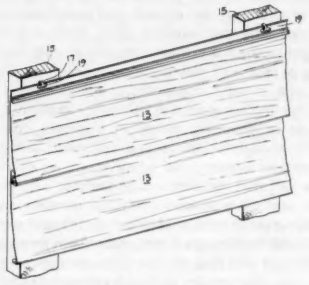
cutting an elongated slot in said sheet material adjacent an edge of said length of sheet material while said surface of said length of sheet material is positioned against said support;

securing a fastener to said support by moving a first portion of said fastener into said support for frictional engagement with said support;

positioning a second portion of said fastener so that it extends through said slot;

controlling the dimensions of said slot so that said slot is larger than said second portion of said fastener that lies therein to permit movement of said length of sheet material relative to said fastener; and

providing a fastening portion on said fastener by forming an initially straight third portion of said fastener into a loop



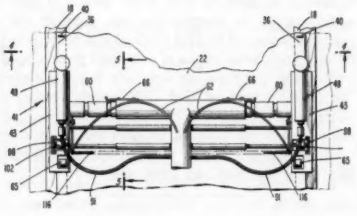
that extends over said edge of said length of material, and moving an end of said third portion into contiguous relationship with said support so as to limit movement of said sheet material away from said support.

4,280,312

APPARATUS FOR INSTALLING STRIPS OF MATERIAL TO SUPPORT ELEMENTS OF A BUILDING

Charles Otts, Box 358, DeQueen, Ark. 71832

Filed Feb. 7, 1980, Ser. No. 119,398
Int. Cl.³ E04D *15/00*
U.S. Cl. 52—749 **20 Claims**



1. Apparatus for securing a strip of material between spaced support members of a building, comprising:

a control head including

runner means for traveling along said support members to align said control head relative to said support members,

means for guidingly receiving opposite edges of said strip of material and permitting movement of said control head relative to said strip of material while positioning said edges adjacent said support members,

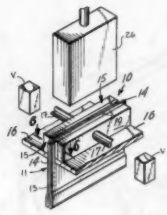
securing means for securing said edges to said support members as said control head travels therealong; and

a handle connected at one end to said control head and operable to be held at the opposite end by an operator to manually displace said control head along said support members while said strip of material is being secured thereto.

4,280,313
PACKAGING APPARATUS

Walter I. Akkala, and Thomas M. Gorshe, both of Neenah, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 3, 1979, Ser. No. 81,528
Int. Cl.³ B65B *43/30;* B31B *11/00*
U.S. Cl. 53—175 10 Claims



1. In means for handling a flattened pouch having opposed planar walls joined along side portions thereof to define an opening for receiving material to be packed, the combination comprising:

a pair of opposed vacuum box means mounted for movement toward and away from one another;

improved means disposed on each said vacuum box means for opening said flattened pouch, said improved means comprising a series of superimposed, paired, mutually spaced vacuum ports in fluid communication with one another, the outer pair of said vacuum ports being adapted to frictionally engage a wall portion of said flattened pouch and being in flexibly closed position prior to introduction of a vacuum of said vacuum box means;

means for moving said vacuum box means toward one another into position engaging the walls of the flattened pouch in the region of its opening;

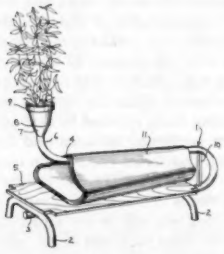
means for introducing a vacuum through said vacuum ports upon engagement of said pouch walls by said vacuum box means to effect flexing and opening of said outer vacuum port, and to draw portions of said pouch walls through said port and into a cavity defined by the underlying vacuum ports thereby initiating formation of creases in said pouch walls; and

means for moving said vacuum box means apart to urge said pouch walls apart to define said pouch opening.

4,280,314
DEVICE FOR PACKAGING ELONGATED ARTICLES

Matthew A. Stuck, Menasha, Wis., assignor to Modern Mfg. Co., Inc., Menasha, Wis.

Filed Sep. 7, 1979, Ser. No. 73,536
Int. Cl.³ B65B *67/02, 67/04*
U.S. Cl. 53—241 4 Claims

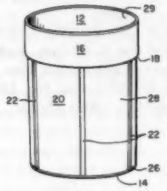


1. A device for packaging plants in protective bags, comprosing a tubular frame including a first generally horizontal section having a forward end, said frame also including a generally vertical section connected to the forward end of said horizontal section, a plant support mounted on the upper extremity of the vertical section and located at a level above the horizontal section, said support adapted to support a plant to be packaged, a bag support platform disposed beneath and generally parallel to said horizontal section, said platform extending laterally to either side of a vertical plane passing through said horizontal section and extending forwardly beyond the forward end of said horizontal section, and a plurality of nested open-ended bags disposed around said horizontal section and freely resting on said supporting surface, said bags being individually drawn upward around said vertical section and around said plant supported on the support to thereby package the plant.

4,280,315
BULK LOADER

D. Lewis Von Hapsburg, 138 Alta St., Arcadia, Calif. 91006

Filed Jul. 27, 1979, Ser. No. 61,362
Int. Cl.³ B65B *67/04, 67/12*
U.S. Cl. 53—473 11 Claims



1. The apparatus for facilitating loading of bulk materials into a flexible container having an opening, comprising a solid, one-piece shell-like structure having:

a longitudinal axis;

an upper end;

a lower end, said upper end having a cross-sectional area greater than that of said lower end; and

a gripping rim proximate to said upper end, said gripping rim extending around the entire outer circumference of said shell-like structure, said rim being substantially wider, as measured longitudinally along the shell-like structure, than its thickness, as measured radially from said longitudinal axis;

said shell-like structure provided, on its outer surface, with a plurality of longitudinal grooves, said grooves extending toward said upper end from a point in proximity to said lower end.

4,280,316
BRIDLE BIT SUGAR CUBE HOLDER

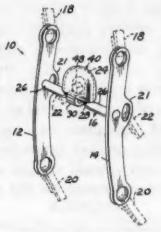
John D. Taylor, R.R. 3 Box 16, Perryton, Tex. 79070

Filed Dec. 17, 1979, Ser. No. 104,591
Int. Cl.³ B68B *1/06*
U.S. Cl. 54—8 1 Claim

1. In combination with a bridle bit having a rigid mouthpiece characterized by axially aligned normally horizontal opposing end portions and an inverted substantially U-shaped curb medially its length having a forward surface and a rearward surface and having a roller journalled for rotation about the axis of a pin horizontally bridging the spacing between the mouthpiece opposing end portions, the improvement comprising:

a hood overlying and secured to the inverted U-shaped curb of said mouthpiece and having a depending wall edge lying in a plane tangent with the upper limit of said roller for defining a downwardly open article receiving chamber within the U-shaped curb above said roller,

the wall of said hood having a square opening, communicating with the chamber, dimensioned for close passage



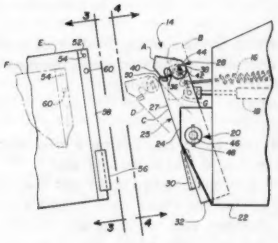
of a sugar cube, or the like, and characterized by being orientated to define a diamond shape.

4,280,317

ADJUSTABLE COUPLING APPARATUS

Curtis H. Lindblom, and Joe E. Shriver, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 16, 1980, Ser. No. 140,898
Int. Cl.[3] A01D *35/12*
U.S. Cl. 56—15.6 **2 Claims**



1. In combination with a motorized harvesting vehicle and a removable harvesting attachment, an adjustable coupling apparatus comprising:

(a) a support connected to a frame portion of the vehicle;

(b) a coupling arm pivotally mounted on the support;

(c) a first end of the arm defining a receptacle formed therein;

(d) a latch connected to the first end of the arm adjacent the receptacle, the latch being movable between latching and unlatching positions relative to the receptacle and having an inclined surface;

(e) means connected to the attachment for engaging the receptacle and the inclined surface portion of the latch;

(f) means connected to the vehicle for moving the arm between pivotal positions for varying the position of the receptacle relative to the support and relative to the means for engaging the receptacle;

(g) a first pad connected to the coupling arm, said pad being adjacent a second end of the arm opposite the first end; and

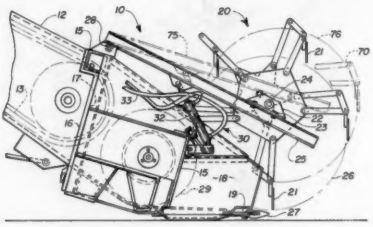
(h) means connected to the attachment for engaging the first pad, said means including a second pad spaced from the means for engaging the receptacle.

4,280,318

INFINITE REEL ADJUSTMENT MECHANISM

Earl E. Koch, Mohnton, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Apr. 2, 1980, Ser. No. 136,656
Int. Cl.[3] A01D *57/04*
U.S. Cl. 56—221 **9 Claims**



1. In a crop harvesting header disposed on a mobile crop harvesting machine for movement over the ground to harvest standing crop material having a frame adapted for connection to said mobile crop harvesting machine; a generally upright rear wall; first and second spaced apart side walls extending forwardly from said rear wall; a transversely disposed cutterbar positioned substantially completely between said side walls forwardly of said rear wall, said cutterbar being operable to sever standing crop material; first and second spaced apart longitudinally disposed reel arms pivotally affixed to said frame adjacent, respectively, said first and second side walls, each said reel arm having a forward end spaced from said reel arm pivot; a reel rotatably mounted between said forward ends of said first and second reel arms, said reel being positioned generally above said cutterbar to engage standing crop material, pull it rearwardly over said cutterbar and convey severed crop material towards said rear wall; a lift means pivotally affixed to each said reel arm between said forward end and said reel arm pivot for selectively rotating said reel arms about said reel arm pivots to effect a raising or lowering of said reel relative to said cutterbar, said lift means being operable within a finite range between a maximum reel height and a minimum reel height, said lift means being adjustably mounted on said frame to selectively vary said minimum reel height relative to said cutterbar; and drive means for operatively powering said reel, said cutterbar and said lift means, an improved adjustable mounting for said lift means on said frame comprising:

a link means pivotally interconnecting said frame at a first link pivot and said lift means at a second link pivot;

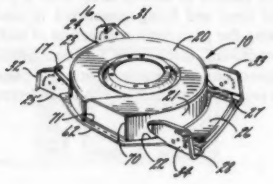
a draw bolt anchored to said frame and pivotally connected to said link means remotely of said first link pivot, said draw bolt including actuating means cooperable therewith to rotate said link means about said first link pivot, such that upon manipulation of said actuating means, said lift means is selectively vertically positionable relative to said frame to vary the position of said minimum reel height relative to said cutterbar, said actuating means being operable to infinitely adjust the rotated position of said link means within limits imposed by said draw bolt, said draw bolt being positioned between said frame and said link means such that forces imposed on said draw bolt by the operation of said lift means are tension forces; and

a clamping means interconnecting said link means and said frame to lock said link means into a preselected position against said frame such that forces imposed on said draw bolt and said first link pivot during operation of said mobile crop harvesting machine are reduced by at least partially spreading such forces through said clamping means to said frame.

4,280,319
DECK CONSTRUCTION FOR ROTARY MOWER

Joseph E. Scanland, Savannah, Ga., assignor to Roper Corporation, Kankakee, Ill.

Continuation-in-part of Ser. No. 918,960, Jun. 26, 1978, Pat. No. 4,172,351. This application Jul. 16, 1979, Ser. No. 57,804
Int. Cl.³ A01D *67/00, 55/18*
U.S. Cl. 56—255 9 Claims

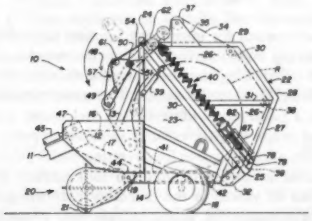


1. A rotary mower deck comprising in combination a shallow cylindrical blade housing, the housing having a vertical sidewall with a lower edge, horizontal front and rear aprons extending fore and aft from the lower edge of the housing to define respective leading and trailing edges extending transversely of the deck, the aprons having lateral edges, upwardly bent wheel supporting plates on the respective lateral edges of the aprons and extending vertically at right angles thereto, the blade housing, aprons and wheel supporting plates being all integrally formed of the same sheet of metal, the wheel supporting plates associated with at least the rear apron each having a cantilevered tip portion having a lower edge which is free of the adjacent apron, the tip portion being sufficiently long as to overlap the sidewall of the housing and engaging such side wall at a region which is spaced substantially upwardly from the lower edge of the housing, the tip portion of each associated wheel supporting plate being secured at its remote end in integral metal-to-metal contact to the sidewall of the housing whereby such wheel supporting plate in addition to its wheel-supporting function forms a downwardly angled integral brace between the sidewall and the adjacent apron.

4,280,320
TENSIONING APPARATUS

Edward T. Eggers, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 25, 1978, Ser. No. 936,964
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 9 Claims



1. An improved tensioning apparatus for a bale forming means of a crop roll forming machine having a mobile frame, a pickup, a crop material conveying means, a bale forming means, and a bale forming region defined generally by the bale forming means and the frame, the improvement comprising:

spring means having a first end and an opposing second end, the spring means being extensibly affixed to mounting means at the first end and connected to the bale forming means at the second end, the spring means further having easily adjustable tension adjustment means comprising at least a first means and a second means, the first means being intermediate of the bale forming means and the second end of the spring means so that a resistive force is generated to the extension of the spring means in direct relationship to the adustments made to the adjustment means, the resistive force being transmitted to the bale forming means at the second end thereby providing an adjustably increasing tension to the bale forming means and correspondingly adjustably increasing the force exerted upon the crop material being formed into a bale in the bale forming region;

the spring means further comprising at least a first spring and a second spring, the first spring being connected to the second spring and the second adjustment means and via the first adjustment means to the bale forming means so that the resistive force and the resulting tension exerted upon the bale forming means is generated substantially by the first spring until the bale expands to a predetermined size where the resistive force and resulting tension are generated jointly by the first spring and the second spring;

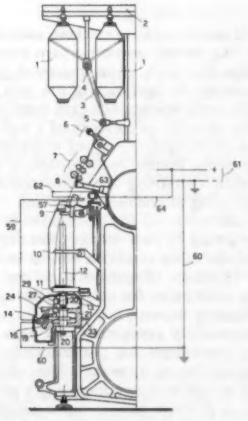
the first and second springs being concentrically mounted coil springs operably affixed to the adjustment means at the first end on each side of the frame mounted so that the second spring is slidably movable within the first spring until the bale expands to the predetermined size; and

an adjustment pin and an elongate cable having a first end connectable to the first spring and the second spring, and a second end connectable to the bale forming means defining a path therebetween, the adjustment pin being insertable into predetermined positions in the frame adjacent the second end to vary the tension exerted upon the initial crop material being formed into a bale in the bale forming region when the cable is carried thereagainst, thereby altering the path of the cable between the first end and the second end.

4,280,321
SAFETY SPINDLE-STOPPING DEVICE FOR A SPINNING FRAME

Angelo Marzoli, Palazzolo Sull'Oglio, Italy, assignor to F.lli Marzoli & C. S.p.A., Italy

Filed Apr. 12, 1979, Ser. No. 29,513
Claims priority, application Italy, Apr. 24, 1978, 22684 A/78
Int. Cl.³ D01H *13/16*
U.S. Cl. 57—81 2 Claims



1. Spinning frame apparatus comprising a drawing section and a spindle in which sliver is passed from said drawing section to said spindle, a turnable support member upon which

said spindle is mounted eccentrically, a tangential belt connected for driving said spindle in rotation, the apparatus further including means for trapping the sliver positioned upstream of said drawing section, a thread feeler positioned downstream of said drawing section, a brake, and means for turning said support member to disengage said spindle from said tangential belt and to cause it to engage said brake, an electric circuit including an electric switch with said thread feeler forming a part of said electric switch, a warning light connected to said electric switch, and control means for actuating said means for turning said support member, said support member connected to said trapping means to actuate said trapping means upon turning of said support member to disengage said spindle from said tangential belt.

4,280,322

TEXTILE YARN PROCESSING MACHINE WITH YARN BREAK MONITORING MECHANISM

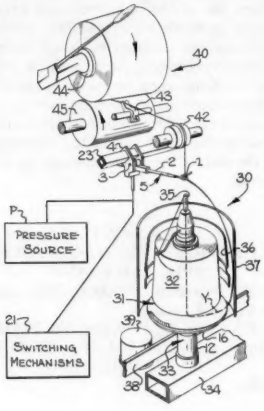
Siegfried Inger, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,390

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832930

Int. Cl.³ D01H *13/16, 1/10*

U.S. Cl. 57—81 **20 Claims**



1. In a textile yarn processing machine, such as a two-for-one twister or the like, having respective yarn processing stations, the combination therewith of an improved yarn monitoring system for stopping the operation of the yarn processing station in response to the absence of a yarn running therethrough, as for example, upon the occurrence of a yarn breakage, and constructed to avoid inadvertent and undesirable stopping of the yarn processing station upon restarting while the yarn processing station is returning to a normal operating condition, said yarn monitoring mechanism comprising

a yarn sensor constructed and mounted so as to be held in an operative setting by yarn tension when the yarn is running in normal operating condition and to be released in the event of the release of such yarn tension;

a switching mechanism for stopping the operation of the yarn processing station;

means pneumatically connecting said yarn sensor to said switching mechanism for pneumatically actuating said switching mechanism upon the release of said yarn sensor from said operative setting including a pressure line connected to a pressure source and a pressure outlet at a terminal end of said pressure line and cooperating with said yarn sensor so that said outlet is blocked by said yarn sensor when said yarn sensor is in one of its operative or released settings and said outlet is open when said yarn sensor is in the other of its operative or released settings; and

time delay means actuable upon restarting of the yarn processing station for permitting a further actuation of said switching mechanism only after a predetermined period of time has elapsed, said time delay means including means interrupting the pneumatic connection of said yarn sensor to said switching mechanism, and a pressure reservoir having a restricted bleed opening for allowing the pressure level therein to slowly drop over a predetermined period of time and being connected to said means for interrupting the pneumatic connection of said yarn sensor to said switching mechanism for maintaining the pneumatic connection interrupted until the pressure in said pressure reservoir has dropped to a predetermined level.

4,280,323

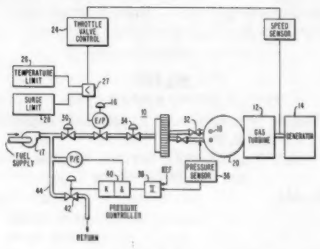
GAS TURBINE FUEL CONTROL HAVING FUEL VISCOSITY COMPENSATION TO PROVIDE IMPROVED IGNITION RELIABILITY

Chester A. Jersey, Wallingford, and Roy W. Kiscaden, Morton, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 25, 1978, Ser. No. 909,421

Int. Cl.³ F02C *9/26*

U.S. Cl. 60—39.14 R **2 Claims**



1. A fuel control for improving ignition reliability in a gas turbine having substantially fixed orifice nozzles comprising means for controlling the position of a throttle valve which varies the fuel flow to the turbine to control turbine speed or load over a relatively wide range, a fuel pump operative to supply fuel to the throttle valve at an elevated pump discharging pressure, a bypass valve for diverting fuel from the throttle valve, means located proximate to said nozzles and downstream from all valves in the fuel flow path for generating a signal representative of actual nozzle fuel pressure at least during the ignition period, means for generating a pump discharge pressure reference as a function of a nozzle pressure reference and the actual nozzle fuel pressure during ignition and means for generating a control output for said bypass valve during ignition in response to the actual pump discharge pressure and the pump discharge pressure reference substantially to hold the nozzle fuel pressure at the desired value even over relatively wide ambient temperature changes and corresponding fuel viscosity variations.

4,280,324

FUEL DISTRIBUTION DEVICE

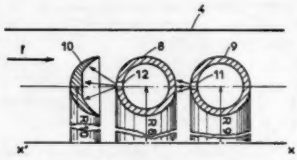
Jean-Claude M. Arliguie; Marc F. B. Buisson, both of Le Mee sur Seine, and Jacques E. J. Caruel, Dammarie les Lys, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Sep. 21, 1978, Ser. No. 944,616

Claims priority, application France, Sep. 27, 1977, 77 28981

Int. Cl.³ F02K *3/10*

U.S. Cl. 60—261 **13 Claims**



1. Fuel distribution device in a channel for high velocity gas flow in the afterburner duct of a gas turbine engine, comprising: two toric injection manifolds within and coaxial with the channel, located in two planes perpendicular to the axis of said channel, the ratio of the median radii of each manifold and of the channel as measured in the same transverse plane being constant, said manifolds being pierced by small diameter orifices uniformly distributed for the introduction of liquid fuel into the gas flow, and wherein: the orifices in the manifold located downstream with respect to the direction of the flow of the gases are arranged in the upstream face of said manifold in a circular row coaxial with it, the axis of each of the orifices being contained in an axial plane of the channel and said manifolds being in sufficiently close proximity that liquid fuel emitted by said orifices would impinge on the upstream manifold and be atomized thereby into the gas stream in said channel, and the axis of the orifices in said downstream manifold intercept the torus located upstream without intersecting the portion of the axis common to both manifolds located between the transverse planes containing said manifolds, said channel being substantially free of obstructions radially inwardly and outwardly of said manifolds.

4,280,325

UNIDIRECTIONAL ENERGY CONVERTER

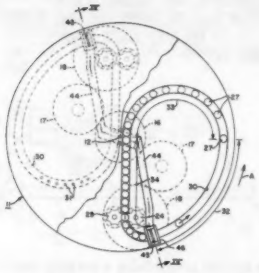
Sherwood L. Fawcett, Columbus, and James N. Anno, Cincinnati, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 2,411, Jan. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 872,848, Jan. 27, 1978, abandoned. This application Jul. 24, 1980, Ser. No. 171,806

Int. Cl.³ F03G *7/00*

U.S. Cl. 60—370 **40 Claims**

1. Apparatus for converting a first form of energy into a second form of energy comprising a platform, support means for carrying said platform for rotation about a central axis, at least one continuous, closed-loop passageway carried by the platform in a plane extending perpendicular to said central axis, a plurality of freely-movable pistons contained within the passageway, at least one region in the passageway in which the pistons must move inwardly against centrifugal force as said platform rotates, at least one other region in the passageway where said pistons are moved outwardly under the influence of centrifugal force, means for imparting a force to successive ones of the pistons to propel them against centrifugal force in said one region, means for converting the energy of pistons moving outwardly under the influence of centrifugal force in



said other region into rotational energy, and means coupling said rotational energy to said platform to rotate the same.

4,280,326

GENERATORS OF IMPULSES

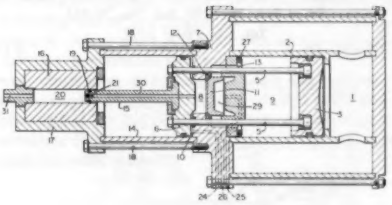
Keith Moodie, Calver, near Sheffield, England, assignor to Health and Safety Executive, London, England

Continuation of Ser. No. 833,315, Sep. 14, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 93,473

Claims priority, application United Kingdom, Sep. 21, 1976, 39137/76

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547 R **9 Claims**

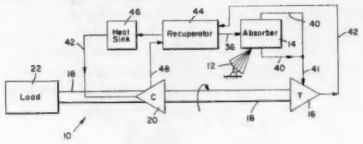


1. A fluid pressure intensifier apparatus operative to generate very high pressure impulses of short duration for use in mining, tunnelling, rock breaking and like operations, comprising a stepped piston assembly having a large piston and a small piston mechanically linked to one another and reciprocable between forward and rearward positions with the large piston being located in a large cylinder and having a large rearward face in communication with a reservoir for compressed fluid, and with the small piston being located in a small cylinder having fluid inlet and outlet passages, said small piston having a small forward face for delivering the pulses of high pressure fluid through said outlet passage, the stepped piston assembly having an auxiliary piston located between the large piston and the small piston which auxiliary piston is mechanically linked to the large piston and which is reciprocable in an auxiliary cylinder, the large cylinder and the auxiliary cylinder having a common end wall, and a valve in said common end wall for controlling the flow of fluid from the volume enclosed by the large cylinder forward of the large piston into the volume enclosed by the auxiliary cylinder rearward of the auxiliary piston.

4,280,327
SOLAR POWERED TURBINE SYSTEM

Robin Mackay, Rancho Palos Verdes, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 30, 1979, Ser. No. 34,325
Int. Cl.[3] F03G 7/02
U.S. Cl. 60—641 AC 62 Claims

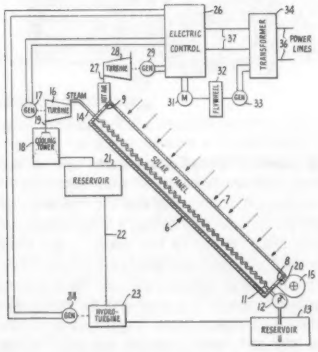


1. A turbine system comprising a turbine and a compressor mounted on a common rotatable shaft; means for transferring solar radiant heat energy to a working fluid substantially at atmospheric pressure; means for coupling the heated working fluid to said turbine for expansion to a subatmospheric pressure; and means for coupling the expanded working fluid to said compressor for recompression substantially to atmospheric pressure and for resupply to said transfer means for reheating.

4,280,328
UTILIZATION OF SOLAR ENERGY

Claude J. Falconer, 19349 Riverside Dr., Sonoma, Calif. 95476

Filed Sep. 28, 1979, Ser. No. 79,956
Int. Cl.[3] F03G 7/02
U.S. Cl. 60—641 A 1 Claim

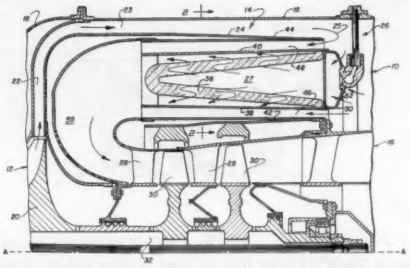


1. A solar energy device comprising a casing inclined at an angle to the horizontal and having an open front to receive solar energy, the casing having an air inlet at its lower end and an air outlet at its upper end, a series of energy receiving tubular conduits arranged horizontally in the casing and extending from the bottom to the top of the casing, means for supplying water to an inlet to the conduit for heating by solar engery, an outlet at the top of the casing for release of steam created by the heating of the water in the conduits, and a turbine for utilizing the steam and a turbine for utilizing the heated air released through the casing outlet.

4,280,329
RADIANT SURFACE COMBUSTOR

Ray A. Rackley, Phoenix, Ariz., and David V. Carpenter, Mendocino, Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 16, 1978, Ser. No. 916,161
Int. Cl.[3] F02G 3/00
U.S. Cl. 60—754 29 Claims

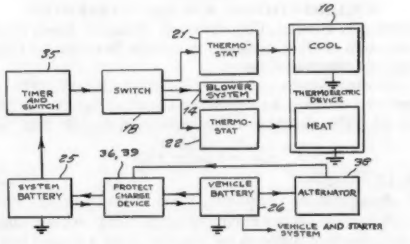


1. A radiant surface combustor for supplying heat energy to the working fluid of a heat engine, comprising a porous combustor element; means for supplying fuel and air to one side of said combustor element for passage therethrough and combustion at the other side thereof to produce primarily radiant heat energy; and wall means forming a flow path adjacent said combustor element for passage of the fluid to be heated, said wall means including an extended heat transfer surface member in close proximity with said other side of said combustor element for absorbing the generated heat energy, and an additional extended heat transfer surface member within said flow path in physical contact with the wall means and in heat exchange relation with the working fluid for transferring the absorbed heat energy to the working fluid.

4,280,330
VEHICLE HEATING AND COOLING SYSTEM

Verdell Harris, 455 Carlton Ave., Brooklyn, N.Y. 11238, and Richard L. Miller, Dix Hills, N.Y., assignors to Verdell Harris, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 834,677, Sep. 19, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,971
Int. Cl.[3] F25B 21/02; B60H 3/04
U.S. Cl. 62—3 4 Claims



1. A vehicle heating and cooling system for use with an automotive vehicle having a first battery and an alternator for charging the battery, comprising: a thermo-electric heat pump; a second battery electrically connected to said heat pump for operating said heat pump; switch means for controlling the flow of current to said heat pump from said second battery, said switch means controlling the mode of operation of said heat pump so that said system acts in a first mode of heating the compartment of an automotive vehicle and in a second mode

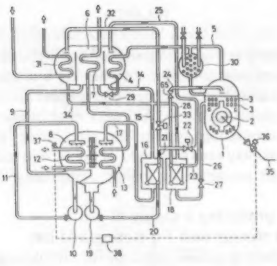
of cooling the compartment; means for controlling the temperature of the air in said compartment, said means for controlling the temperature comprising a first thermostat operative when said system is in said first mode of operation, and a second thermostat electrically parallel with said first thermostat and operative when said system is in said second mode of operation; a fan for distributing the air in said compartment, said fan being connected in parallel with said second battery for operation thereby; first means for connecting the positive terminal of said second battery to the positive terminal of said first battery of said automotive vehicle, said first means for connecting comprising a first switch which is in the normally open position when the engine of the automotive vehicle is not running, and in a closed position when the engine of the automotive vehicle is running, so that said second battery may be periodically charged by the alternator of the automotive vehicle; and second means for connecting the positive terminal of said second battery to the positive terminal of said first battery, said second connecting means comprising a second switch, said second switch being normally open, and a relay connected in parallel with said second battery for closing said second switch when activated, whereby said second battery may be used in order to start the engine of the automotive vehicle when the first battery is low or inoperative.

4,280,331

SINGLE EFFECT AND DOUBLE EFFECT ABSORPTION REFRIGERATING SYSTEM

Kazuhiro Yoshii, and Norikazu Kubota, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of Osaka, Japan

Filed Nov. 2, 1979, Ser. No. 90,751
Claims priority, application Japan, Nov. 7, 1978, 53-138103
Int. Cl.³ F25B *15/00, 27/00*
U.S. Cl. 62—148 **9 Claims**



1. In a double effect absorption refrigerating system which includes a high temperature generator heated by a high temperature heat source, a first low temperature generator heated by refrigerant vapor separated from a dilute solution in said high temperature generator, a condenser, an evaporator, an absorber producing a dilute solution, a first heat exchanger and a second heat exchanger interconnected in an air-tight manner through refrigerant lines, dilute solution lines and dense solution lines, the improvement comprising:

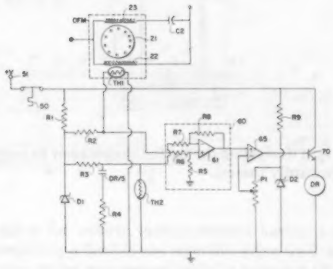
a combination single effect and double effect absorption refrigerating system comprising a second low temperature generator which is connected between one of said dilute solution lines and one of said dense solution lines; a low temperature heat source to heat said second low temperature generator, means for delivering said dilute solution directly from said one dilute solution line into said second low temperature generator when a single effect-double effect combined operation is performed; and means for controlling the supply of a solution and a fuel to said high temperature generator in response to the heating capacity of said second low temperature generator.

4,280,332

DEFROST CONTROL MONITORING FAN MOTOR TEMPERATURE RISE

Asadulla R. Khan, Ballwin, and Otto H. Boning, St. Louis, both of Mo., assignors to Intertherm Inc., St. Louis, Mo.

Filed Jul. 30, 1979, Ser. No. 61,707
Int. Cl.³ F25D *21/06;* **G08B** *21/00*
U.S. Cl. 62—156 **3 Claims**



1. A heat pump system defrosting control of the type which causes reversal of refrigerant flow and de-energizes the outdoor coil fan electric motor upon initiation of defrosting, comprising

a first temperature sensor mounted to the outdoor coil fan electric motor and sensing the fan motor temperature,

a second temperature sensor so mounted as to sense the outdoor ambient air temperature,

means, responsive to the first and second temperature sensors, to measure the difference in the temperatures sensed by the two sensors, whereby the difference represents the temperature rise of the fan motor,

means to compare such measured temperature difference to a selected abnormal fan motor temperature rise,

switch means, responsive to the comparison, to initiate such defrosting and so de-energize the outdoor coil fan motor when the temperature difference exceeds the said selected abnormal temperature rise, and

means, controlling defrosting, to sense the outdoor coil temperature and permit initiation of such defrosting if a pre-selected low coil temperature has been reached and to terminate defrosting when a pre-selected high coil temperature has been reached.

4,280,333

PASSIVE ENVIRONMENTAL TEMPERATURE CONTROL SYSTEM

John M. Corliss, and George H. Stickford, both of Columbus, Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 16, 1979, Ser. No. 21,292
Int. Cl.³ F25D *23/12;* **F28D** *15/00;* **F24J** *3/02*
U.S. Cl. 62—259.1 **3 Claims**

1. Apparatus for cooling a room comprising:

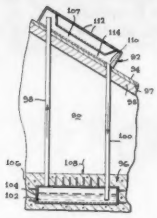
a heat dissiptating device located outside said room, and having a passage with a first end and a lower second end;

a fluid container insulated from the outdoor environment, lying below said heat dissipating device, thermally coupled to the room, and containing liquid at the bottom portion and vapor at the top portion; and

first and second pipes connecting said heat dissipating device to said container;

said frist pipe extending from the top portion of said container to the first end of said passage of said heat dissipat-

ing device to carry vapor upwardly thereto, and said second pipe extending the second end of said passage of



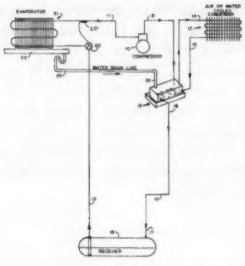
said heat dissipating device to the container to carry liquid downwardly thereto.

4,280,334

WATER CONDENSATE RECOVERY DEVICE

Ness R. Lakdawala, 119 de Touraine St., St. Lambert, Quebec, Canada

Filed Jun. 26, 1979, Ser. No. 52,253
Int. Cl.³ F25B *47/00*
U.S. Cl. 62—277 **6 Claims**



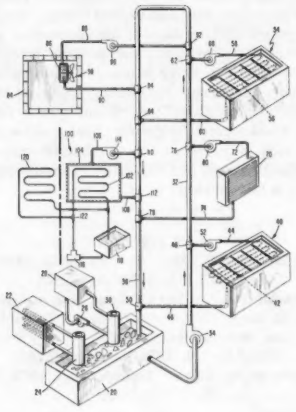
1. A water condensate recovery device for use in a refrigeration system, said device comprising a condensate housing for receiving condensate water therein; said housing having side walls, a bottom wall and a top wall; a compressor heat transfer conduit disposed parallel and adjacent said bottom wall for contact with said condensate water and through which refrigerant fluid from a compressor flows for cooling therein by said condensate water, said compressor heat transfer conduit also being connected to an input line of a refrigerant cooling condensor, said condensor having an output line connected to a refrigerant fluid conduit disposed parallel to said bottom wall of said housing for contact with said condensate water of said condensate housing to provide cooling of said refrigerant fluid from said condenser, and aperture means in said condensate housing to permit escape of vapour caused by evaporation of the condensate water therein during heat transfer between said refrigerant fluid in said compressor heat transfer conduit and said refrigerant fluid conduit, said condensate cooling in said housing further permitting simultaneous reduction of the discharge pressure of said compressor.

4,280,335

ICEBANK REFRIGERATING AND COOLING SYSTEMS FOR SUPERMARKETS

Arthur Perez, Buchanan, and Fayez F. Abraham, Niles, both of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed Jun. 12, 1979, Ser. No. 47,870
Int. Cl.³ F25B *25/00*
U.S. Cl. 62—332 **10 Claims**



1. An icebank refrigerating and air conditioning system for use in a commercial establishment having a display area containing a plurality of refrigerated storage and display cases for storing and displaying produce, said establishment having a forced air circulating system for circulating air into and through the display area by means of ducts, said icebank refrigerating and air conditioning system comprising the combination of:

means for producing a supply of ice;

an icebank storage tank for storing said ice;

means, including a main conduit, for circulating cold water from said icebank storage tank to said display area and said forced air circulating system and for returning said water to said icebank storage tank;

display case heat exchange means associated with said produce display cases for cooling said cases;

means, including first branch conduit means and first pump means, for selectively coupling said heat exchange means to said main conduit means for selectively circulating cold water from said icebank storage tank through said display case heat exchange means and for returning said water to said storage tank downstream of said display case heat exchange means;

circulation system heat exchange means associated with said forced air circulating system for cooling ambient air flowing through said ducts into said display area; and

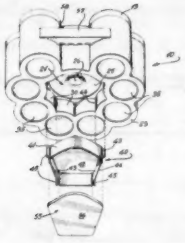
means, including further branch conduit means and further pump means, for selectively coupling said circulation system heat exchange means to said main conduit means for circulating cold water from said icebank storage tank through said circulation system heat exchange means and for returning said water to said storage tank downstream of said circulation system heat exchange means.

4,280,336

PORTABLE COOLER WITH FOOD RECEPTACLE

Frank Taylor, LaSalle, Canada, assignor to Holbro A.G., Zug, Switzerland

Filed Mar. 13, 1980, Ser. No. 129,755
Int. Cl.³ F25D 3/08, 3/10
U.S. Cl. 62—457 13 Claims



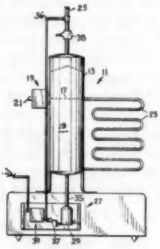
1. A cooler comprising a first section and a second section, a plurality of spaced compartments arranged about a central chamber within said first section, each said compartment being in communication with said chamber, an access passage in said second section, means for mounting said second section on said first section, a pillar concentric with a central axis in said central chamber, a coolant container, an aperture in said coolant container, said coolant container being receivable in said central chamber with said pillar extending in said aperture, said first section having a central cavity in a bottom wall thereof to define a food receiving opening in its outer bottom surface.

4,280,337

LOW-SIDE OIL-SEPARATION AND RE-USE SYSTEM FOR AMMONIA-REFRIGERATION APPARATUS

George T. Kemp, 614 E. Locust St., Chatham, Ill. 62629

Filed Jan. 4, 1980, Ser. No. 109,671
Int. Cl.³ F25B 43/02
U.S. Cl. 62—470 10 Claims



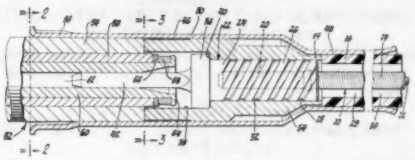
1. In an ammonia-type refrigeration system having, in conventional assemblage, a compressor, a condensor, a surge means, and an evaporator, the improvement comprising: an oil-separation tank having upper and lower zones connected to the bottom of said surge means, a first conduit for draining settled-out oil from the bottom of said surge means into said oil-separation tank, a second conduit for conducting oil from the lower zone of said oil-separation tank to the suction intake of said compressor, a valve for controlling the flow of oil through said second conduit, and an adjustable timer-unit constructed and arranged to open said valve at the beginning of each ON portion of each ON-OFF compressor cycle and to close said valve at the end of a preselected time period after the start of each compressor-ON operation.

4,280,338

ROTATABLE FLEXIBLE DRIVE SHAFT WITH NOISE ABATEMENT

Gilbert E. Shannon, Lapeer, and David F. Friesorger, Flint, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1979, Ser. No. 98,552
Int. Cl.³ F16C 1/02
U.S. Cl. 64—2 R 3 Claims



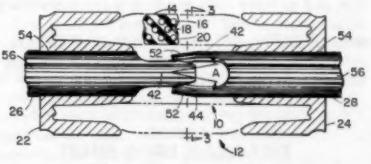
1. A drive for vehicle instrumentation having a rotatable input comprising a flexible and rotatable drive shaft, said drive shaft having outer wire means helically wound with a predetermined lead, a rotatable connector member secured to an end portion of said drive shaft to provide a drive connection to said input of the instrumentation, a flexible casing for said drive shaft extending generally coaxially therewith, said drive shaft being spaced radially inwardly from the inner walls of said casing to provide a lubricant receiving space therebetween, a quantity of lubricating grease disposed within said lubricant space, said drive shaft being adapted to be rotatably driven within said casing in the direction of the lead of said outer wire means so that said drive shaft will pump a portion of said grease in said lubricant space toward said output member to a collection station adjacent to the end of said station whereby grease collected therein will cushion contact of said drive shaft with the inner wall of said casing for minimizing noises otherwise resulting from such contact.

4,280,339

TORQUE TRANSFER DEVICE FOR FLEXIBLE SHAFT COUPLINGS

Robert E. Stuemky, Elizabeth, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Apr. 27, 1979, Ser. No. 34,069
Int. Cl.³ F16D 3/18
U.S. Cl. 64—9 R 10 Claims



1. A torque transfer device for tubular, yielding element flexible shaft couplings comprising:

a first shaft portion having an external diameter, an axis and a forked end defining two opposed teeth that each have tooth flanks oriented with the first shaft axis and extending through narrowed portions to a tooth tip; and

a second shaft portion having an external diameter, an axis and a forked end defining two opposed teeth that each have tooth flanks oriented with the second shaft axis and extending through narrowed portions to a tooth tip, the first and second shaft portions nominally substantially coaxially aligned with each other and the teeth interfitted with each other in meshing fashion, the teeth dimensioned to nominally provide a positive clearance between adjacent flanks and corners so that tooth flanks do not nor-

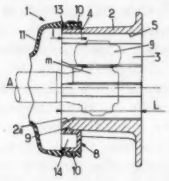
mally come into contact with each other when the shafts are angularly misaligned with each other at a predetermined conical angle having an apex that generally intersects the axis of the first and second shaft portions juxtaposed the interfitted teeth and the teeth also dimensioned so that flanks of the interfitting teeth contact each other to transfer torque when the clearance is taken up at predetermined torque overloads.

4,280,340

UNIVERSAL JOINT, NOTABLY FOR AUTOMOBILE VEHICLE TRANSMISSIONS

Jean A. Goguet, Limours, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of, France

Filed Sep. 17, 1979, Ser. No. 76,219
Claims priority, application France, Oct. 27, 1978, 78 30553
Int. Cl.³ F16D *3/30*
U.S. Cl. 64—21 **10 Claims**



1. A universal joint for a transmission, comprising:

(a) a substantially bowl-shaped drive element coupled to a drive shaft for transferring torque to a driven shaft, said element having an open end, a length L with respect to its axis of rotation, and at least two ball races for receiving rollers borne by a hub connected fast to said driven shaft, said drive element further having an outer surface substantially parallel with its inner surface so that the outer surface of the drive element includes concave areas angularly situated between the ball-races;

(b) a sealing sheath having an open end circumferentially mounted around the open end of the bowl of said drive element, and

(c) an insert circumferentially mounted around the open end of the bowl of the drive element for mounting said open end of said sealing sheath around said drive element, said insert having a length of less than L along its axis of rotation, and an inner surface which is complementary to the outer surface of said drive element for filling said concave areas of said outer surface of said drive element, and an outer surface which is entirely convex for sealingly engaging said open end of said sealing sheath.

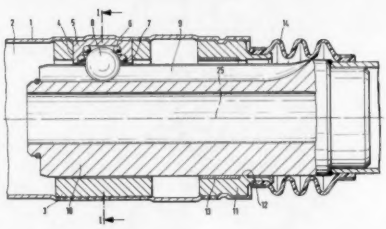
4,280,341

TELESCOPIC DRIVE SHAFT

Werner Krude, Neunkirchen, Fed. Rep. of Germany, assignor to Uni-Cardan AG, Lohmar, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,707
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804778
Int. Cl.³ F16D *3/06*
U.S. Cl. 64—23 **5 Claims**

1. Telescopic drive shaft comprising an axially extending tubular shaped outer shaft member, an axially extending inner shaft member located within said outer shaft member with the axes of said inner and outer shaft members disposed in substantially parallel relation, rolling bodies located within said outer shaft member and extending between said outer shaft member and inner shaft member for effecting axially sliding movement of said inner shaft member relative to said outer shaft member and for effecting torque transmission between said inner and outer shaft members, said rolling members being mounted in at least one support member secured to one of said inner and outer shaft members and movably supported in grooves formed in the other one of said inner and outer shaft members, wherein the improvement comprises that said at least one support member has at least one recess formed therein for each said rolling body and at least three guide balls located in each said recess for supporting said rolling body associated therewith, said outer shaft member includes a first ring concentric with said inner shaft member with the radially inner surface of



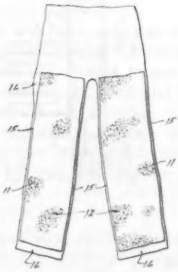
said ring spaced closely outwardly from the outer surface of said inner shaft member, said first ring having bores formed therein spaced axially apart around the inner circumference of said ring, said at least one support member comprises one said support member secured in each bore in said ring, each said support member having two concentric recesses formed therein for each said rolling body with at least three said guide balls in each said recess, and said recesses in each said support member being located in spaced planes extending parallel to one another and to the axes of said inner shaft member.

4,280,342

PROTECTIVE PAD OR GARMENT FOR THE HUMAN BODY OR PARTS THEREOF

Kjell Eng, Mullsjö, and Anders G. Bengtsson, Borås, both of Sweden, assignors to AB Aiser, Borås, Sweden

Continuation of Ser. No. 841,887, Oct. 13, 1977, abandoned.
This application Feb. 21, 1979, Ser. No. 13,445
Claims priority, application Sweden, Oct. 14, 1976, 7611393
Int. Cl.³ A41B *9/02*; D04B *7/04*
U.S. Cl. 66—177 **8 Claims**



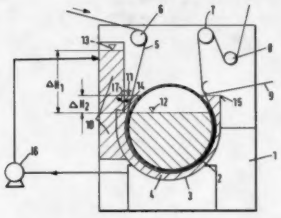
1. In combination with a garment having trouser legs for covering the legs of a person operating a saw or the like, a protective pad attached to one of said trouser legs to be in protective relationship to an associated leg of said person covered by said trouser leg, said protective pad comprising a double-knit warp fabric of synthetic material having two layers of fabric being joined together by connecting threads, said connecting threads being sufficient in number and said layers being spaced a sufficient distance apart that said connecting threads will fill the gaps between the teeth of a saw severing the outermost of said layers and slow down the cutting action

of the saw to permit said person to protect said leg before being cut.

4,280,343
APPARATUS FOR THE CONTINUOUS WET TREATMENT OF LIQUID-PERMEABLE TEXTILE MATERIAL OR THE LIKE

Hans Fleissner, Riehen, Switzerland, assignor to Vepa AG, Riehen, Switzerland

Filed Jan. 28, 1980, Ser. No. 116,209
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1979, 2903125
Int. Cl.³ D06B *5/08*
U.S. Cl. 68—158 **5 Claims**



1. An apparatus for the continuous wet treament of liquid-permeable textile material or the like which comprises a container provided with a container wall and filled with a treatment liquid, a sieve drum rotatably mounted in said container, the drum being at least partially immersed in the liquid, and being partially covered by the textile material on the outside peripheral surface thereof, a treatment chamber being formed between said sieve drum and the container wall, a distributor duct open over the length of the sieve drum, a pump means for supplying liquid to said distributor duct, the liquid being fed to said treatment chamber from the outside via the distributor duct, means for ensuring that the liquid is discharged from within the sieve drum, whereby a hydraulic pressure head effecting the throughflow is produced between the inside and the outside of the sieve drum, and said distributor duct including a liquid discharge slot for feeding the liquid to the outside of the sieve drum with increased energy over the peripheral surface covered by the textile material and by the liquid transversely across the operating width, thereby feeding the liquid uniformly across the operating width of the sieve drum; said liquid discharge slot having a constant cross-sectional area, being oriented towards the sieve drum and being formed transversely across the operating width and in the proximity of the sieve drum, and said liquid being fed to said slot under uniform pressure across the length of the slot with the distributor duct extending above the liquid discharge slot and receiving a liquid volume that produces a hydraulic pressure head.

4,280,344
DEVICE FOR RINSING AND CLEANING A DRAG CLOTH

John D. O'Connor, 1817 Robin Hood, Sarasota, Fla. 33581

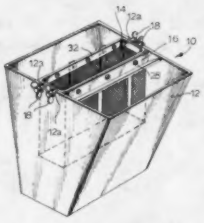
Filed Oct. 22, 1979, Ser. No. 87,578
Int. Cl.³ D06F *1/12*
U.S. Cl. 68—213 **3 Claims**

1. A device useful for cleaning and removing excess cleaning liquid from a drag cloth comprising:

a receptacle for holding a drag cloth cleaning liquid, said receptacle having side walls and a lip at the top of said side walls forming a top opening;

a rigid frame, said frame having a top portion that includes a plurality of rigid members forming an elongated rectangle that extends substantially across said receptacle top opening lip, said frame including side and lower members which extend substantially downward from the upper frame members, the length of said side frame members being such to extend substantially to the middle portion vertically of said receptacle;

a screen coupled to the side and lower members of said frame;



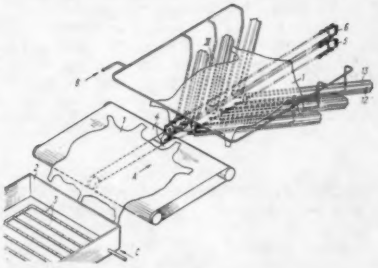
means for removably attaching said frame to the top opening lip of said receptacle; and

a drag cloth receiving trough connected to the upper members of said frame along one side of said frame.

4,280,345
APPARATUS FOR CLEANSING CATTLE HIDES

Natan M. Gimelfarb, ulitsa Pervomaiskaya, 67, kv. 67; Fedor T. Lugovnev, ulitsa Mayakovskogo, 40, kv. 18, and Nikolai E. Misjura, pereulok Treugolny, 13,, all of Mogilev, U.S.S.R.

Division of Ser. No. 855,981, Nov. 30, 1977, Pat. No. 4,202,664.
This application Sep. 11, 1979, Ser. No. 74,803
Int. Cl.³ C14C *1/00*; C14B *1/06*
U.S. Cl. 69—32 **3 Claims**



1. An apparatus for carrying out the method for cleansing cattle hides, comprising: a tank for washing the hides with scouring water; a means for feeding scouring water to said hides; a pair of belt transporters mounted after said tank, situated parallel to each other and effecting the transfer of a hide emerging from the tank; a drive for said conveyers; a pair of chain conveyers for grasping a hide and clamping it in position along its axis with its hair covering downwards, and situated one above the other; a drive of said chain conveyers; one of said chain conveyors entering the clearing between said belt conveyors; several pairs of shafts with carding teeth, arranged on either side of said chain conveyors at an angle to the longitudinal axis of the apparatus, sufficient for the maximum teeth coverage of the hide surface being treated; each tooth of said shafts being situated at an acute angle to the tangent to the shaft's surface in a direction opposite to its rotation; a hold-down member mounted above each of said pairs of shafts along the shaft's longitudinal axis for keeping the hide at an equal distance from the teeth and set movably towards and from the teeth, enabling adjustment of the clearance therebetween in accordance with the thickness of the hide being processed; a pair of rolls with ribs mounted after the last pair of said plurality of toothed shafts, said ribs being arranged on the surface

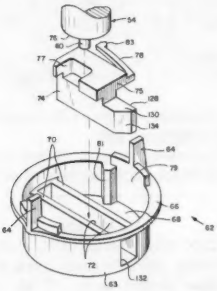
and along the generatrix of said rolls and coming in contact with the hide for the removal of surface moisture therefrom and a water spraying means mounted between said pair of shafts and rolls.

4,280,346

TORQUE OVERRIDE THREADED LOCKING CAP

John H. Evans, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed May 21, 1979, Ser. No. 40,561
Int. Cl.³ B65D *51/16, 55/14*
U.S. Cl. 70—165 **19 Claims**



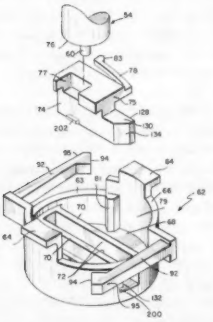
1. In a locking cap for a fuel tank threaded filler neck, the cap including a gasket subject to damage due to overtightening of the cap on the neck, a lock for controlling cap removal, a shell providing a hand grip, a threaded closure for engaging the filler neck to close it, and first and second engaging means providing a torque limited connection between the shell and the closure in a direction to advance the cap into the filler neck to protect the gasket, lock actuated bolt means and cooperating additional engaging means for selectively coupling the shell directly to the closure for cap removal, the bolt means being connected to the shell for rotation therewith, and the additional engaging means being provided on the closure.

4,280,347

TORQUE OVERRIDE THREADED LOCKING CAP

John H. Evans, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 40,561, May 21, 1979. This application Dec. 7, 1979, Ser. No. 101,154
Int. Cl.³ B65D *51/16, 55/14*
U.S. Cl. 70—165 **17 Claims**



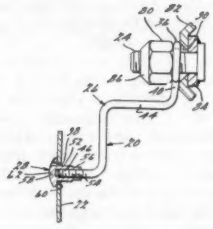
1. A locking cap for a threaded filler neck comprising in combination a threaded closure member for engaging and closing the neck, a key-actuable lock, a shell providing a hand grip and including means for retaining said lock, an annular race disposed for rotation between the shell and closure, the race including first engaging means and the closure including second engaging means for engaging the first engaging means to provide a driving connection between the closure and race which is positive in the cap-removal direction and torque-limited in the cap-advancing direction, the race further including third engaging means, the shell including a hub mounted for rotation with the shell hand grip portion and providing fourth engaging means for engaging the third engaging means to provide a driving connection between the third and fourth engaging means which is positive in the cap-advancing direction and torque-limited in the cap removal direction, bolt means mounted for rotation with the shell, and fifth engaging means on the closure, the bolt means being actuable by key actuation of the lock for movement into engagement with the fifth engaging means to couple the bolt means and shell directly to the closure to permit removal of the cap from the filler neck.

4,280,348

AUTOMOTIVE VEHICLE WHEEL COVER LOCKING MEANS

Richard E. Teston, 28335 Gratiot, Roseville, Mich. 48066

Filed Nov. 19, 1979, Ser. No. 95,213
Int. Cl.³ F16B *41/00;* **B60B** *7/06*
U.S. Cl. 70—166 **2 Claims**



1. An automotive vehicle wheel cover locking means comprising, in combination, a lock stem including a single annular base portion of split ring configuration and defining an opening adapted to receive a conventional wheel lug stud, said lock stem also including an integral tang portion projecting radially outwardly from said base portion and an integral leg portion extending in a direction generally perpendicular to said base portion and terminating in an externally threaded shank portion, and a lock nut having a tubular body portion defining an internally threaded blind bore adapted to receive and threadably engage said shank portion of said lock stem, said lock nut also including an integral head portion having an inner surface adapted to abut the outer surface of a wheel cover and a convex outer surface blending smoothly with said inner surface at the periphery of said head portion, said head portion defining a plurality of axially extending passageways intersecting said convex surface in a predetermined pattern.

4,280,349
ROTARY CYLINDER LOCK, ESPECIALLY FOR AUTOMOTIVE VEHICLES

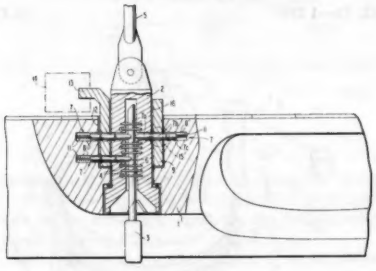
Christian Grabner, Geghingen; Theodor Reinhard, Böblingen; Rolf Krügener, and Hermann W. Kurth, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,738

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822098

Int. Cl.³ E05B *31/00*

U.S. Cl. 70—358 **10 Claims**



1. A rotary cylinder lock arrangement for a motor vehicle equipped with a safety means for at least one of providing an alarm and for interrupting at least one function vital to an operation of the motor vehicle, the arrangement comprising a lock cylinder means rotatably mounted in a casing, tumbler means arranged in the lock cylinder means, and at least one first key means for controlling a positioning of the tumbler means and for rotating the lock cylinder means into open and closed positions, characterized in that additional locking means are operatively connected with the lock cylinder means and the safety means, and at least one second key means adapted to be inserted into the lock cylinder means is provided for controlling both a positioning of the tumbler means and for controlling a positioning of the additional locking means such that an insertion and rotation of only the second key means results in an actuation of the safety means so as to prevent unauthorized use of the motor vehicle.

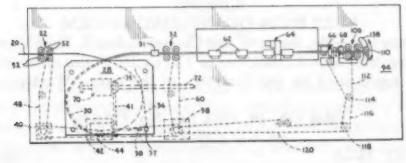
4,280,350
WIRE BENDING SYSTEM

James F. King, Winston-Salem, and Gilbert L. Horton, Kernersville, both of N.C., assignors to Consolidated Foods Corporation, Winston-Salem, N.C.

Filed Dec. 10, 1979, Ser. No. 101,727

Int. Cl.³ B21D *7/14, 7/08*

U.S. Cl. 72—7 **10 Claims**



10. The method of sequentially forming wire frames from a length of wire of rectangular cross-section into generally semicircular configurations with the longer dimension of the rectangular cross-section extending radially with respect to the curvature of the support frames comprising the steps of; selectively advancing a length of wire along a prescribed path, sensing the advancing end portion of the wire, severing the forward portion of the wire to a prescribed length in response to sensing of the wire end, feeding the severed wire segment along a predetermined path, detecting the advancing end portion of the severed wire segment, and deforming the advancing wire segment in a prescribed, controlled manner in response to bend data control signals related to a preselected curvature, to incrementally deform the segment to a generally semi-circular configuration.

4,280,351
TAPER ROLLING OF METAL

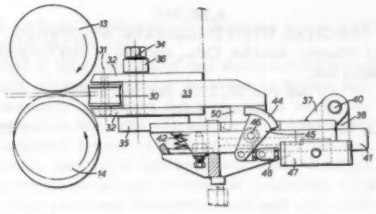
Alexander I. Wilson, Sheffield, England, assignor to Hille Engineering Company Limited, Sheffield, England

Filed May 25, 1979, Ser. No. 42,578

Claims priority, application United Kingdom, May 26, 1978, 23632/78

Int. Cl.³ B21B *37/08, 1/42*

U.S. Cl. 72—21 **10 Claims**



1. In a method of taper-rolling metal elements comprising the steps of

(a) rolling a metal blank in a series of passes between a pair of work rolls;

(b) while the blank is being rolled, controlling the separation of the work rolls in accordance with the linear movement of the blank; and

(c) rolling the edges of the blank with auxiliary edging rolls during at least one of the passes to reduce the lateral spread caused by the work rolls; the improvement comprising

(d) supporting each of the work rolls by at least one support roll whereby said work diameter may have a relatively small diameter, and

(e) driving each said work or a support roll thereof to urge said blank between said rolls in each pass.

4,280,352
APPARATUS FOR FORMING CORRUGATED SHEET MATERIAL

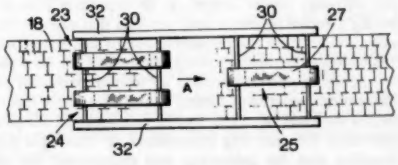
Timothy A. T. Cowell, Canley, England, assignor to Covrad Limited, Canley, England

Filed Aug. 9, 1979, Ser. No. 65,252

Claims priority, application United Kingdom, Aug. 15, 1978, 33425/78

Int. Cl.³ B21D *13/04, 13/10*

U.S. Cl. 72—186 **7 Claims**



1. Apparatus for forming corrugated sheet material compris-

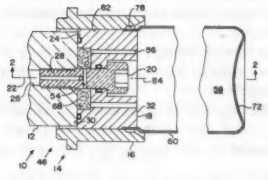
ing corrugation-forming means whereby corrugated material of unitary structure is formed and moved in a longitudinal direction, the material having a plurality of interconnected corrugated strips each with crests and intervening flanks, the corrugations in adjacent strips are displaced from one another in the longitudinal direction of the strips to give a chevron formation of the strips, and the crests in each strip are spaced apart from one another; and closing up means for reducing the spacing between the crests; the closing up means including at least a first pair of rollers spaced apart transversely of the direction of travel of the corrugated material between the rollers, and a second pair of rollers located centrally relative to the first pair of rollers, the first and second pairs of rollers being rotatable at different speeds, the higher speed rollers being upstream of the lower speed rollers with respect to the direction of travel of the corrugated material, and the rollers of each pair of being engageable with opposite sides of the corrugated material so that the speeds of the pairs of rollers control the rate of feed of the corrugated material between the rollers.

4,280,353

MACHINE WITH PNEUMATIC STRIPPING

Kelly J. Murphy, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jun. 25, 1979, Ser. No. 51,574
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 **8 Claims**



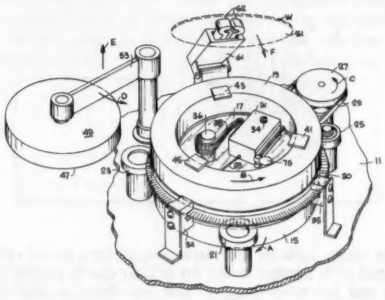
1. In a machine of the type which includes mandrel means, comprising a shaft portion having both an elongated longitudinal axis and a first end that is substantially orthogonal to said longitudinal axis and comprising a head portion that is secured to said shaft portion with a second end of said head portion juxtaposed against said first end and a third end of said head portion distal from said juxtaposed ends, for insertion of said third end into a bottomed recess of an article of manufacture, and stripping means, comprising compressed air for stripping said article from said head portion, the improvement in which said stripping means comprises: an expansion chamber comprising a recess in one of said portions that extends longitudinally inward from the respective one of said juxtaposed ends; first passageway means, having a first minimum flow path area, for supplying said compressed air to said expansion chamber; and second passageway means, comprising a hole that communicates with said third end, and having a second minimum flow path area, for receiving compressed air from said expansion chamber, and for delivering said compressed air into said bottomed recess of said article, said second passageway means having a first volume and said expansion chamber having a second volume, said second volume being twice as large as said first volume.

4,280,354

ACOUSTIC METHOD AND APPARATUS FOR MEASURING SURFACES OF WAFERS AND SIMILAR ARTICLES

William R. Wheeler, Saratoga, and George J. Kren, Los Altos, both of Calif., assignors to Tencor Instruments, Mountain View, Calif.

Filed Feb. 12, 1980, Ser. No. 120,932
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—1 DV **16 Claims**



1. A method of measurement of surfaces comprising,

providing a flat reference surface,

moving a distance measuring transducer across the flat reference surface on a known path while simultaneously measuring with said transducer the relative perpendicular reference distance between the transducer and a calibration surface of known topography spaced apart from the flat reference surface by a fixed amount,

replacing the calibration surface with a test surface of unknown topography but similar in topography to said calibration surface,

moving the distance transducer across the flat reference surface in the same known path as previously while simultaneously measuring with said transducer the relative perpendicular unknown distance between the transducer and the surface of unknown topography,

comparing the relative perpendicular reference distance to the perpendicular unknown distance over the path taken by the transducer, whereby deviations in the relative perpendicular unknown distance from the relative perpendicular reference distance represent deviations in topography in the test surface relative to the calibration surface.

4,280,355

FUZE DATA QUANTIZING SYSTEM

William Donnally, Boonton, and Chester L. Smith, Lake Hopatcong, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 19, 1980, Ser. No. 122,639
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—5 **5 Claims**

2. A fuze impact data-encoding system for sampling and recording a deceleration profile of a projectile at a plurality of discrete time intervals and for measuring and recording a time difference between initial impact time t_0 and a fuze detonation time t_1 of a fuze of said projectile, comprising:

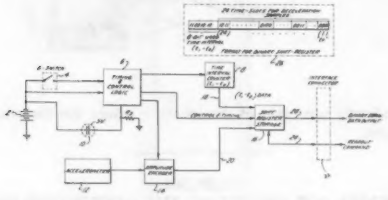
(a) a power source to energize said system;

(b) a g-switch electrically coupled to power source, said switch being momentarily closed to initiate an operating

sequence during first motion of said projectile's fuze time t_0;

(c) a timing and control logic unit connected in combination with a time interval counter which is coupled in series with said g-switch to indicate a time difference t_1-t_0;

(d) accelerometer means for providing a voltage output proportional to a deceleration magnitude experienced in a fuze of said projectile;



(e) an amplitude encoder electrically connected to the output of said accelerometer, said amplitude encoder generating a binary number representing the highest threshold exceeded during a particular sample time;

(f) a shift-register electrically coupled to an output of said amplitude encoder, said shift register storing information in serially form; and

(g) interface connector coupled to said shift-register to transform a stored information in said shift register to a ground station read-out unit.

4,280,356

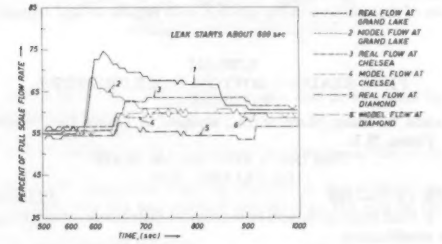
PIPELINE LEAK DETECTION

Thomas L. Stewart, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 13, 1979, Ser. No. 57,248

Int. Cl.³ G01M *3/28*

U.S. Cl. 73—40.5 R **7 Claims**


LEAK STARTS ABOUT 600 sec
1 REAL FLOW AT GRAND LAKE
2 MODEL FLOW AT GRAND LAKE
3 REAL FLOW AT CHELSEA
4 MODEL FLOW AT CHELSEA
5 REAL FLOW AT DIAMOND
6 MODEL FLOW AT DIAMOND
PERCENT OF FULL SCALE FLOW RATE
TIME, (sec)

1. A process for detecting leaks in a pipeline when the flow is in a transient or steady condition comprising receiving information concerning real pressures and real flows at the inlet and outlet ends of the pipeline, predicting pressures and flows at various locations in the pipeline, comparing real pressures and real flows at the various locations in the pipeline with the predicted pressures and flows at such locations, and denoting a leak in the pipeline when upstream of the leak real pressure decreases and real flow increases with respect to the predicted pressure and flow and downstream of the leak real pressure decreases and real flow decreases with respect to the predicted pressure and flow.

4,280,357

INSPECTION OF ELECTRICALLY NON-CONDUCTIVE WORKPIECES

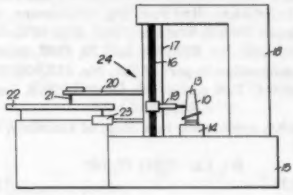
Philip Savage, Littleover, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 10, 1979, Ser. No. 83,513

Claims priority, application United Kingdom, Nov. 16, 1978, 44830/78

Int. Cl.³ G01N *19/08*

U.S. Cl. 73—104 **6 Claims**



1. A method for dimensionally inspecting a wax workpiece, comprising the steps of:

coating at least a portion of that workpiece with an electrically conductive material by vapor deposition, and

subsequently inspecting the thus coated workpiece with inspection apparatus adapted for the non-contacting dimensional inspection of electrically conductive workpieces, said inspection apparatus being provided with probe means adapted to establish electrically a non-contacting positional relationship with said electrically conductive coating on said workpiece.

4,280,358

MONITORING THE OPERATION OF AN INTERNAL COMBUSTION ENGINE

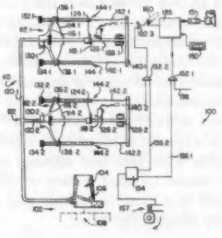
Henning M. Henderson, Springs, South Africa, assignor to Kiloking (Proprietary) Limited, South Africa

Filed Oct. 19, 1979, Ser. No. 86,569

Claims priority, application South Africa, Oct. 19, 1978, 78/5898

Int. Cl.³ G01L *23/24*

U.S. Cl. 73—115 **9 Claims**



1. A method of monitoring the operation of an internal combustion engine having inlet ducting for admitting air or a fuel/air mixture into the engine, which method comprises

sensing the degree of vacuum in the inlet ducting and providing a vacuum signal when said vacuum falls below a predetermined vacuum level;

sensing the rotational speed of the engine and providing a first speed signal when said rotational speed exceeds a first predetermined speed value and a second speed signal when said rotational speed exceeds a second predetermined speed value greater than the first predetermined speed value;

gating the vacuum signal and the second speed signal to provide an enabling signal when either said vacuum signal

or said second speed signal, or both said vacuum signal and said second speed signal are present; and

issuing a warning signal and/or making a recording under operational conditions of the engine in which both the first speed signal and the enabling signal are present.

4,280,359

ROTARY CAM DRIVE FOR IMPACT TOOL

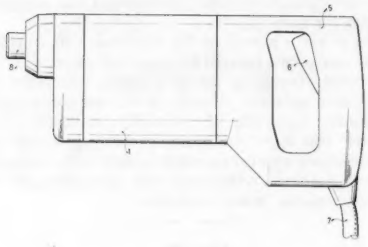
Wolfgang Schmid, Plattenhardt; Karl Wanner, Echterdingen; Jörg Fälchle, Bempflinge; Manfred Bleicher, and Frank Müller, both of Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 810,959, Jun. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 615,904, Sep. 23, 1975, abandoned. This application Oct. 12, 1978, Ser. No. 950,585

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1974, 2449191

Int. Cl.³ B25D *11/10*

U.S. Cl. 73—123 **21 Claims**



1. A power-driven hammer drill, comprising a housing; a tool chuck on said housing and adapted to hold an elongated tool; means for impacting said tool chuck in direction lengthwise of the tool, including a member reciprocable in said direction; and drive means for said impacting means, comprising a rotatable shaft mounted for rotation about an axis paralleling said direction, a drum coaxially mounted on said shaft for rotation with the same and having a circumferential surface formed with a circumferentially complete cam track, and transmitting means guided by said cam track and operatively connected with said member for transmitting reciprocatory motion to the same in response to rotation of said drum with said shaft; means for supporting said rotatable shaft at two locations spaced from one another in an axial direction by a predetermined distance; and means for driving said rotatable shaft in rotation and including a driving shaft having a first toothed section, and a second toothed section provided on said drum and engageable with said first toothed section of said driving shaft, said second toothed section of said drum being located between said two locations within said distance so as not to extend axially beyond the latter.

4,280,360

FLUID MEASURING DEVICE

Hiroshi Kobayashi, Yokosuka; Toru Kita, Yokohama, and Takeshi Fujishiro, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

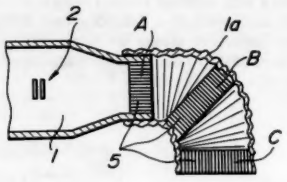
Filed Aug. 27, 1979, Ser. No. 70,258

Claims priority, application Japan, Aug. 25, 1978, 53-103625; Mar. 15, 1979, 54-29385

Int. Cl.³ G01F *15/00*

U.S. Cl. 73—198 **15 Claims**

1. A fluid measuring device comprising measuring means for measuring any one of quantity of flow and flow rate in a tubular passage for a fluid to be measured, and flow rectifiers arranged upstream and downstream of said measuring means, wherein said direction of the fluid flow is changed downstream of the measuring means and the flow rectifier is arranged



immediately upstream of the location where the direction is changed.

4,280,361

DEVICE FOR DETECTING THE DEFROSTING OF FROZEN PRODUCTS

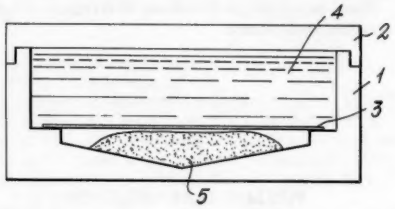
Franco Sala, Via Milani 3/A, Milan, Italy, assignor to Franco Sala, Milan, Italy

Filed Nov. 8, 1979, Ser. No. 92,616

Claims priority, application Italy, Jun. 8, 1979, 23388 A/79; Jul. 4, 1979, 24091 A/79

Int. Cl.³ G01K *11/12*

U.S. Cl. 73—356 **12 Claims**



1. A device for detecting the defrosting of frozen products, which comprises a rigid container, on the inside of which there are two solutions, one at least aqueous and saline and another one at least colored, separated by a septum breakable at the moment of freezing, said container being wholly filled with one of the solutions in one portion with respect to said septum.

4,280,362

PEAK READING BOTTOM HOLE PRESSURE INSTRUMENT

James W. Haag, Marrero, La., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,678

Int. Cl.³ G01L *7/16*

U.S. Cl. 73—709 **2 Claims**

1. Peak reading bottom hole pressure instrument, comprising in combination

a cylindrical body member having attachment means at one end for lowering it into a borehole,

a concentric cylindrical element inside said body member, adapted for longitudinal movement therein,

said element having a hollow interior open at one end to form part of a chamber to hold gas under pressure at one end of said body member,

a low friction seal between the inside of said body member and the outside of said concentric cylindrical element,

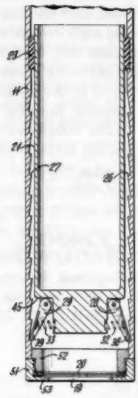
check valve means for charging said one end of said body member with said gas under pressure,

a ratchet for restricting said longitudinal movement toward said one end of said body member to compress said gas and to hold a maximum of said compression,

an open end at the other end of said body member having a screen thereacross to hold out solids,

a scale marked on the outside of said body member,

a position mark on said cylindrical element located for moving adjacent to said scale, and



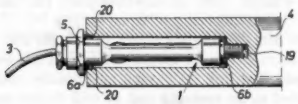
a removable panel on said body member adjacent to said scale and over the path of movement of said position mark in order to read the maximum pressure after removal of said instrument from the hole.

4,280,363

SYSTEM FOR MEASUREMENT OF FORCE WITH DIRECTIONALLY ORIENTATED STRAIN GAUGES

Kurt E. Johansson, Timmermansgatan 12, S-981 00 Kiruna, Sweden

Filed Aug. 22, 1979, Ser. No. 68,513
Claims priority, application Sweden, Aug. 29, 1978, 7809077
Int. Cl.³ G01L *1/22*
U.S. Cl. 73—768 **15 Claims**



1. In a gauge device for indication of a load on an object by detecting bending stresses of said object, comprising:

a shaft (1) fixable at both ends,

at least one gauge unit (2) disposed on an outer surface of the shaft (1);

electrical connection lines (3) coupled to the at least one gauge unit (2) and running out through the end of the shaft;

the improvement wherein:

the shaft (1) is releasably insertable in a hole in an object which is subjected to a load, said hole having a bottom and side walls which are subjected to a load to cause bending movements of said side walls, a clearance being provided between the portion of the shaft intermediate its ends and the side walls of the hole, the end of the shaft inserted first into the hole being the inner end and the opposite end being the outer end; and

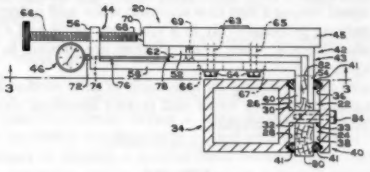
fixing means is provided at the inner and outer ends (16, 17, respectively) of the shaft to releasably fix said inner and outer shaft ends both axially and radially relative to the walls of the hole, said fixing means at the inner end of the shaft comprising threads (16) which are arranged to engage with threads provided in the bottom of the hole, said fixing means at the outer end of the shaft including means fixedly coupling the outer end of the shaft to the walls of the hole so that the shaft, like a part unseparated from the walls of the hole, accompanies said walls in their bending movements, which are due to a load on the walls of the hole.

4,280,364

DEVICE FOR AND METHOD OF MEASURING GLAZING RABBET LOADS

William B. Macurdy, Sarver, and Albert E. Thompson, Jr., New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 27, 1979, Ser. No. 79,297
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—818 **18 Claims**



1. A method of determining compressive stress applied by opposed walls having a predetermined spacing comprising the steps of:

mounting between the walls a pair of spacers each having substantially the same width as the predetermined spacing of the opposed walls with adjacent ends of the spacers spaced from one another to provide a measuring position;

mounting a pair of moveable members each having an engaging surface in the measuring position;

moving the members away from each other to move their engaging surface a distance apart approximately equal to the spacing of the opposed walls; and

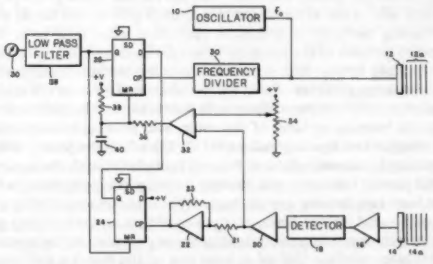
measuring the compressive force acting on the moveable members.

4,280,365

ULTRASONIC DOPPLER FLOWMETER WITH CORRECTION FOR VIBRATORY SIGNALS AT ZERO-FLOW CONDITIONS

James G. Connery, Ambler; Louis D. DiNapoli, Colmar, and Giancarlo Punis, Chalfont, all of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 10, 1979, Ser. No. 83,490
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.25 **7 Claims**



1. An ultrasonic Doppler flowmeter for measuring the flow of a liquid containing reflectors comprising:

transmitting means for producing in said liquid a wave of

ultrasonic vibrations having a component along the axis of said flow;

receiving means for receiving reflected ultrasonic energy from said reflectors in said liquid and producing an electrical output signal having a frequency component related to the rate of motion of said reflectors;

converting means for converting said electrical output signal having said frequency component into a first electrical signal having a magnitude varying in accordance with said frequency component;

indicating means responsive to said magnitude of said first electrical signal for indicating the rate of motion of said reflectors;

discriminating means connected to said receiving means for discriminating between said electrical output signal produced by said receiving means from said reflectors moving in a vibratory mode and said electrical output signal produced by said receiving means from said reflectors moving in a flow mode and producing a second electrical signal having a first characteristic when said reflectors are moving predominately in a vibratory mode and a second characteristic when said reflectors are moving in a flow mode; and

means for producing an indication of zero motion on said indicating means when said second electrical signal has said first characteristic.

4,280,366

GAS DRIVEN GYROSCOPE

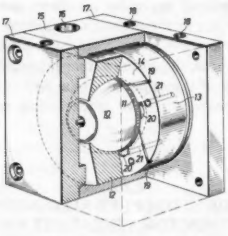
Per Aberg, Döbelnsgatan 1, 111 40 Stockholm, Sweden

Continuation of Ser. No. 729,137, Oct. 4, 1976, abandoned. This application Dec. 22, 1978, Ser. No. 974,654

Claims priority, application Sweden, Nov. 28, 1975, 7513458

Int. Cl.[3] **G01C** *19/12, 19/20*

U.S. Cl. 74—5.7 **7 Claims**



1. A gas driven and gas lubricated gyroscope, especially for low pressure and vacuum operation, which comprises a bearing housing, and a rotor **(10)** of substantially spherical shape in said housing, said rotor having a series of turbine blade grooves **(11)** extending around the rotor along an equatorial part of the rotor, and two bearing surfaces of spherical curvature extending from the part of the rotor with the turbine blade grooves on each side of the rotor essentially to each pole of the rotor, said bearing surfaces of spherical curvature extending over the major portion of the rotor surface, said bearing housing having a bearing cavity with an internal bearing surface mating with the bearing surfaces of said rotor and extending over the major portion of the rotor surface with substantially the same extent as the bearing surfaces of the rotor, said bearing housing consisting of two bearing half parts **(12, 13)** which are joined along mating equatorial plane surfaces **(14)** coplanar with the equatorial part of the rotor, said bearing housing being provided with at least two driving gas channels **(19)** for blowing a driving gas against said turbine blade grooves on the rotor, said driving gas channels consisting of straight grooves provided in the equatorial plane surface **(14)** of at least one of the bearing half parts **(12,13)** extending essentially from the outer periphery of the equatorial surface to the inner periphery of said surface, in a substantially tangential direction with respect to the rotor, said bearing half parts also having spaces **(20)** for discharging the driving gas from the turbine blade grooves, and outlets **(21)** extending from said spaces outside of the bearing housing for discharge of the driving as from said spaces, said spaces consisting of pockets extending outwardly from the periphery of the bearing cavity in the equatorial plane surface of at least one of said bearing half parts, the number of said pockets being equal to the number of said inlet chanels **(19)** with one of said pockets arranged between each two of said inlet channels,

said driving gas channels **(19)**, turbine blade grooves **(11)** and outlet pockets **(21)** being arranged within a narrow annular zone proximate to the equatorial plane,

said rotor and said bearing housing being constituted of materials having similar temperature expansion coefficients, the mating bearing surfaces of said rotor and said bearing housing having a spherical surface size accuracy of at least about 0.001 mm.

4,280,367

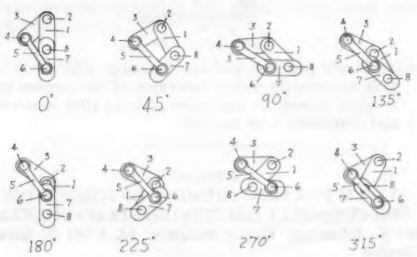
GEARLESS QUADROPHASOR

Jerry L. Burnett, 11323 Sageland, Houston, Tex. 77089

Filed Jul. 2, 1979, Ser. No. 54,576

Int. Cl.[3] **F16H** *21/18, 21/34*

U.S. Cl. 74—42 **4 Claims**



1. I claim the invention of a link and pivot mechanism for providing an oscillating output relative to a continuous rotary input comprising:

a. a first link **(1)** having one end pivotally connected to one end of a second link **(3)** at a first pivot **(2)**, said first and second links **(1,3)** being of equal length,

b. a throw arm **(7)** rotating about an axis **(6)** and being of a length shorter than the length of said first and second links **(1,3)**, said first link **(1)** having an opposite end pivotally connected to an opposite end of said throw arm **(7)** at a second pivot **(8)**,

c. a third link **(5)** having one end pivotally connected to an opposite end of said second link **(3)** at a third pivot **(4)** and also being pivotally connected to said throw arm **(7)** at said axis **(6)**, the length of said third link **(5)** being greater than the length of said first and second links **(1,3)**,

d. the lengths of the links **(1,3,5)** and throw arm **(7)** being proportioned such that the sum of the square of the length of said first link **(1)** plus the square of the length of said second link **(3)** equals the sum of the square of the length of said throw arm **(7)** plus the square of the length of said third link **(5)**,

e. said first pivot **(2)** and said axis **(6)** being connected together by an imaginary line, said throw arm **(7)** defining with said imaginary line a rotation angle as said throw arm **(7)** rotates about said axis **(6)**, said third link **(5)** defining with said imaginary line a displacement angle which varies as said throw arm **(7)** rotates,

whereby said rotation angle and said displacement angle exhibit the following properties:

1. the value of the displacement angle is a minimum at rotation angles of 0 degrees and 180 degrees, and a maximum at 90 degrees and 270 degrees,

2. for each complete revolution of the throw arm **(7)** the

displacement angle goes through two minimum values of equal magnitude and two maximum values of equal magnitude,

3. the displacement angle is always increasing for rotation angles from 0 degrees to 90 degrees, and always decreasing for rotation angles from 90 degrees to 180 degrees,
4. the displacement angle for any rotation angle between 0 degrees to 180 degrees is the same as the displacement angle for a subsequent rotation angle 180 degrees greater than the first rotation angle, and
5. the displacement angle for any rotation angle between 0 degrees and 90 degrees is a 90 degree complement of the resulting displacement angle at a subsequent rotation angle 90 degrees greater than the first rotation angle.

4,280,368

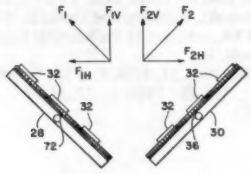
DEVICES FOR PRODUCING VIBRATORY FORCES

Howard M. Woltering, Rte. 2, Box 454, Foster, Ky. 41043

Filed Oct. 29, 1979, Ser. No. 89,605

Int. Cl.³ B06B *1/16;* **B65G** *27/20*

U.S. Cl. 74—61 **8 Claims**



1. A device for producing vibratory forces of variable intensity, said device comprising

a structural frame,

a pair of plates pivotally mounted on said frame,

eccentric weight means mounted on each of said plates for movement in a closed path of travel,

means for synchronously moving both of said weight means between extreme outward positions and extreme inward positions, and

means for pivoting said plates between positions in which they are aligned with each other and the vibratory forces produced by the moving eccentric weight means are nullified and positions wherein the plates are parallel and the vibratory forces produced by the moving weight means are at a maximum.

4,280,369

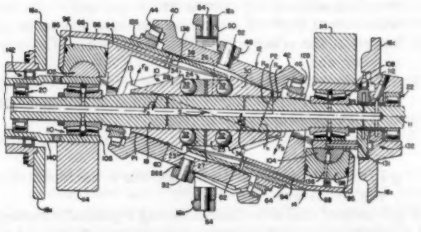
BALL/RAMP SYSTEM FOR TORQUE TRANSMISSION

Harvey N. Pouliot, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 926,823, Jul. 21, 1978, abandoned. This application Jan. 22, 1979, Ser. No. 5,605

Int. Cl.³ F16H *15/16, 13/00*

U.S. Cl. 74—191 **15 Claims**



1. In an infinitely variable torque transmission having a body supported by axially spaced bearings and including a shaft concentric with the axis defined by said bearings, a pair of axially spaced traction elements concentric with said shaft and positioned between said bearings, both of said traction elements being independently rotatable and axially translatable relative to said shaft and having traction surfaces of revolution concentric with said axis, said traction surfaces being in rolling frictional engagement at two points of contact with another pair of traction surfaces under normal force loading developed by axial and radial force components on said traction elements and said shaft, the relative magnitude of said axial and radial force components being dependent on the geometrical configuration of said traction surfaces at the points of rolling friction contact, torque transmitting means between said traction elements and said shaft comprising:

axially shiftable collar means on said shaft between said traction elements, said collar means being rotatably coupled with said shaft and having oppositely facing ends;

at least two equiangularly spaced roller elements between each end of said collar means and each of said traction elements; and

a pair of complementing ramp formations engaging each of said roller elements and operative to develop said axial force component upon relative rotation between said collar means and said traction elements;

said ramp formations having a ramp inclination related to the geometric configuration of said traction surfaces in a manner to develop a normal force between said contacting traction surfaces porportional to torque transmitted between said traction elements and said shaft through said roller elements irrespective of the location of said contact points on said traction surfaces.

4,280,370

CLUTCH ASSEMBLY FOR GEAR-TYPE TRANSMISSION SYSTEM

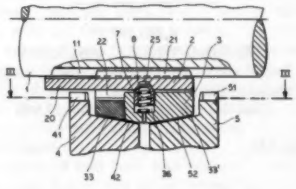
Friedrich Schreiner, Kehlen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 4, 1980, Ser. No. 127,065

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909123

Int. Cl.³ F16D *11/00;* **F16H** *3/38*

U.S. Cl. 74—339 **6 Claims**



1. In a gear transmission for selectively coupling a first shaft with a second shaft having a sliding gear nonrotatably mounted thereon, said first shaft being coupled with an unshiftable gear which is offset from the axis of said second shaft and has teeth engageable by external teeth of said sliding gear upon axial shifting thereof from a disengaged position into an engaged position,

the combination therewith of a control ring coaxially surrounding said sliding gear, indexing means releasably coupling said ring and said sliding gear for joint axial displacement, said ring being further provided with an internal projection coacting with certain of said external teeth for enabling at most a limited relative rotation of said sliding gear and said ring, and operating means for shifting said sliding gear from said position of disengagement to said engaged position, said ring and said unshiftable gear being formed with confronting tapered peripheral sur-

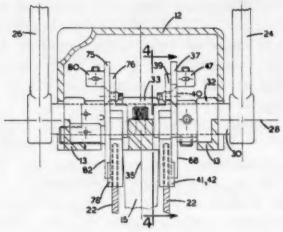
faces contacting each other upon a shifting of said sliding gear into an intermediate position for setting said ring and said sliding gear in rotation prior to meshing of said external teeth with the teeth of said unshiftable gear.

4,280,371

CONTROL LEVER ASSEMBLY

Jacob Kobelt, 6110 Oak St., Vancouver, B. C., Canada V6M 2W2

Filed Feb. 5, 1979, Ser. No. 9,695
Int. Cl.³ G05G *11/00*
U.S. Cl. 74—480 B **12 Claims**



1. A control lever assembly for a cable operated apparatus in which the lever assembly is connected to an end of a cable extending from the apparatus, the control lever assembly having a lever journalled for swinging about an axis of rotation and being characterized by:

(a) a rotatable member cooperating with the lever to rotate about the axis of rotation as the lever is swung thereabouts and a support member securable to the rotatable member so as to rotate therewith and to provide a clearance between the members, at least one of the members having a recess,

(b) a cable fitting fitted in the clearance between the members and adapted for securing to the end of the cable,

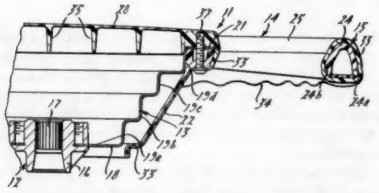
(c) journalling means cooperating with the cable fitting, with the recess of the one member, and with the remaining member to journal the fitting between the members.

4,280,372

STEERING WHEEL ASSEMBLY

Warren A. Van Wicklin, Jr., Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 16, 1979, Ser. No. 57,940
Int. Cl.³ B62D *1/04*
U.S. Cl. 74—552 **9 Claims**



1. A steering wheel assembly having a hub, an energy absorbing sleeve supported on the hub, and a steering wheel armature supported on the sleeve, wherein the improvement comprises:

the energy absorbing sleeve when observed in the plan view having at its top end a substantially rectangular configuration,

the aramture having a thin wall central portion forming a housing for the energy absorbing sleeve,

the upper end of the housing comprising a substantially rectangular annulus the opening of which is complementary to the rectangular configuration of the energy absorbing sleeve,

an annular rim core,

and a plurality of spokes extending from the armature central portion to the rim core,

the armature central portion, the spokes and the rim core being integrally molded of plastics,

and fastening means securing the energy absorbing sleeve and the armature to each other at the upper end of the sleeve,

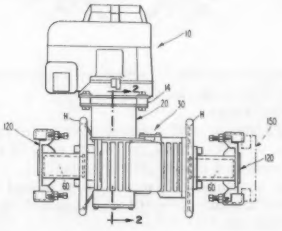
the energy absorbing sleeve having a peripheral rectangular flange overlying the rectangular annulus of the armature at the upper end of the housing to inhibit displacement of the armature axially upward from the energy absorbing sleeve in the event of failure of the fastening means.

4,280,373

PORTABLE DRIVE UNIT FOR VALVE ACTUATOR

Walter J. Denkowski, Rustburg, and Daniel S. Warsing, Lynchburg, both of Va., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed Nov. 21, 1979, Ser. No. 96,505
Int. Cl.³ F16K *31/12, 31/44*
U.S. Cl. 74—625 **18 Claims**



1. A portable drive unit for a valve actuator having a handwheel input shaft, said drive unit comprising:

a. a source of torque power;

b. a clutch;

c. a gear reducer having input means and an output shaft;

d. an annular adapter comprising;

d-1 an annular clamp device adapted to be secured to one of said gear reducer and valve actuator, said clamp device including a pair of pivotal clamp members;

d-2 an annular clamp receiver adapted to be secured to the other of said valve actuator and gear reducer, said receiver including a pair of ears for receiving said pivotal clamp members;

e. a flexible coupling insertable within the axial bores of said annular clamp device and annular clamp receiver, said coupling adapted to be connected at one end to the handwheel input shaft of said valve actuator and to be connected at the other end to the output shaft of said gear reducer; and

f. means, including said clutch, for connecting said source of torque power to said input means of said gear reducer;

g. said flexible coupling comprising:

g-1 a resilient sleeve having an axial bore of rectangular cross section;

g-2 first and second drive blocks, one at each end of said resilient sleeve;

g-3 each of said drive blocks having a generally rectangular cross section corresponding to that of the axial bore of said sleeve;

g-4 each of said drive blocks being received within said sleeve bore;

g-5 said drive blocks having bores of circular cross section and diameters corresponding to those of the handwheel input shaft and of the output shaft of said gear reducer; and

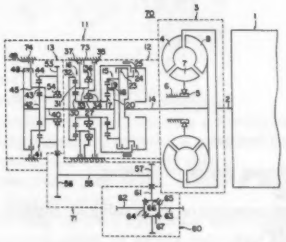
h. means for securing said drive blocks to said input and output shafts.

4,280,374

TRANSMISSION FOR USE IN MOTOR VEHICLE

Seitoku Kubo; Koujiro Kuramochi, and Tatsuo Kyushima, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 27, 1979, Ser. No. 24,259
Claims priority, application Japan, May 11, 1978, 53-56116
Int. Cl.[3] F16H *37/08, 47/00*
U.S. Cl. 74—695 **4 Claims**



1. In a motor vehicle transmission for transmitting power between the engine and wheel axles of said vehicle, the transmission including:

(1) a fluid-type torque converter;

(2) an auxiliary speed change-gear assembly including an underdrive and an overdrive each comprising at least one planetary gear unit, the underdrive planetary gear unit being coaxial with and driven by the torque converter, said underdrive being disposed between said overdrive and said torque converter, and said overdrive planetary gear unit being coaxial with said torque converter and said underdrive unit and having an input element and an output element;

(3) an intermediate shaft coaxial with said torque converter and said planetary units, said intermediate shaft extending through said speed change gear assembly and drivingly interconnecting said underdrive planetary unit with the input element of said overdrive planetary unit;

(4) an output gear disposed between said underdrive and overdrive and being coaxial with said intermediate shaft, said output gear being drivingly fixed to the output element of said overdrive planetary unit;

(5) a transmission gear unit including a counter shaft having a drive gear secured to one end thereof drivingly meshed with said output gear, and a driven gear secured to the other end thereof;

(6) a final reduction gear assembly drivingly connected to said driven gear and to said wheel axles for transmitting power from said transmission gear unit to said wheel axles, said wheel axles being substantially parallel to said intermediate shaft; and

(7) a casing for enclosing said speed change-gear assembly;

the improvement comprising:

(a) a radially extending flange integral with said intermediate shaft forming a part of the input element of said overdrive planetary unit;

(b) a first thrust bearing disposed axially between said overdrive and said underdrive and disposed radially between said intermediate shaft and said casing for rotatably supporting and receiving reaction force from said intermediate shaft;

(c) second and third thrust bearings axially adjacent each other and axially disposed between said flange and said first thrust bearing and radially disposed between said intermediate shaft and said output gear for rotatably supporting said output gear and for receiving thrust from said intermediate shaft, said flange and said output gear, the inner race of said second thrust bearing axially abutting said flange and the inner race of said third thrust bearing axially abutting the inner race of said first thrust bearing; and

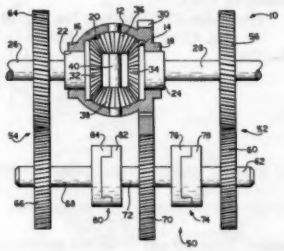
(d) an axially adjustable nut threadably engaged in an opening in said casing, said nut being coaxial with said intermediate shaft and said opening circumscribing the end of said intermediate shaft remote from said torque converter, axial adjustment of said nut permitting application of a predetermined axial force to preload said thrust bearings and axially position said intermediate shaft.

4,280,375

CONTROLLED DIFFERENTIAL

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 2, 1979, Ser. No. 63,012
Int. Cl.[3] F16H *1/44, 1/40*
U.S. Cl. 74—711 **11 Claims**



1. A differential assembly comprising a case, input means associated with said case for directing input torque thereto to effect rotation of the case, pinion means associated with said case, a pair of side gears meshing with said pinion means, a first output driven by one of said side gears, a second output driven by the other of said side gears, first torque transmitting means associated with said first output, rotating at a speed dependent upon the speed of said first output, and adapted to transmit torque to said first output, second torque transmitting means associated with said second output, rotating at a speed dependent upon the speed of said second output, and adapted to transmit torque to said second output, third torque transmitting means associated with said case, rotating at a speed dependent upon the speed of said case, and adapted to transmit torque from said case, first clutch means responsive to said speed of said input means varying from said speed of said first output by a predetermined value to interconnect said first and third torque transmitting means to enable said third torque transmitting means to supply additional torque to said first output and prevent said speed of said input means from varying from said speed of said first output by more than said predetermined value, and second clutch means responsive to said speed of said input means varying from said speed of said second output by a predetermined value to interconnect said second and third torque transmitting means to enable said third torque transmitting means to supply additional torque to said second output and prevent said speed of said input means from varying from said speed of said second output by more than said predetermined value, said first clutch means being a bidirectional one way clutch which is operable to enable said third torque transmitting means to drive said first torque transmitting means when the speed of said input in a first direction exceeds the rotational speed of said first output by said predetermined

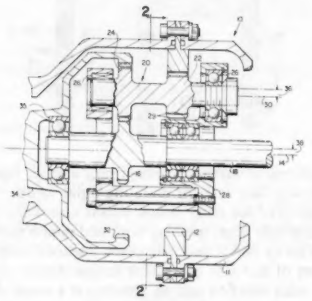
value and when the rotational speed of said input means in a second direction opposite said first direction exceeds the rotational speed of said first output by said predetermined value, said second clutch means being a bidirectional one way clutch which is operable to enable said input means to drive said second torque transmitting means when the rotational speed of said input means in a first direction exceeds the rotational speed of said second output by a predetermined value and when the rotational speed of said input means in a second direction opposite said first direction exceeds the rotational speed of said second output by said predetermined value.

4,280,376

PLANETARY GEAR SYSTEM AND GEARS THEREFORE

George Rosen, West Hartford, Conn., assignor to Energistics, Inc., Bloomfield, Conn.

Filed May 17, 1979, Ser. No. 39,770
Int. Cl.³ F16H *3/44, 55/08*
U.S. Cl. 74—788 **13 Claims**



1. In a planetary gear system having a first ring gear, a pair of planet gears, means supporting said planet gears for coaxial rotation in unison and for rotation about the axis of said first ring gear with one of said planet gears in intermeshing engagement with said first ring gear, a sun gear journaled for coaxial rotation relative to said first ring gear and in intermeshing engagement with the other of said planet gears, and a second ring gear journaled for coaxial rotation relative to said first ring gear and in intermeshing engagement with said other planet gear, said first ring gear and said one planet gear forming one set of gears, said sun gear, said other planet gear and said second ring gear forming another set of gears, the improvement wherein each gear in at least one of the sets is engaged with another of the gears in said one set along a line of action in accordance with the equation:

$$Y = -(\chi_p \tan\phi_o + \chi_p{}^3 b)$$

wherein:

ϕ_o is the pressure angle;

y is one rectangular coordinate of a point on said line of action;

χ_p is the other rectangular coordinate of said point;

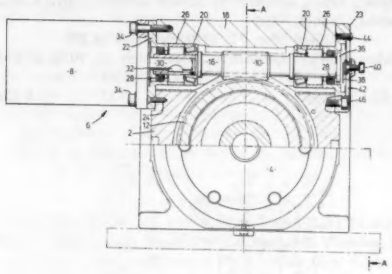
and b has a value other than zero.

4,280,377

INDEXING DEVICE

Gordon Richards, Bristol, England, assignor to Bristol Tool & Gauge Company Limited, Bristol, England

Filed Jun. 15, 1979, Ser. No. 49,186
Claims priority, application United Kingdom, May 1, 1979, 15120/79
Int. Cl.³ B23B *29/24*
U.S. Cl. 74—813 R **8 Claims**



1. An indexing device comprising:

a housing;

a face plate mounted on the housing for rotation about a face plate axis;

a worm wheel in the housing and secured to the face plate and having a rotational axis coaxial with the axis of the face plate;

a drive unit comprising a motor and a worm which is drivable in rotation about

a worm axis by the motor and which meshes with the worm wheel; and adjustment means for adjusting the distance between the worm axis and the worm wheel axis;

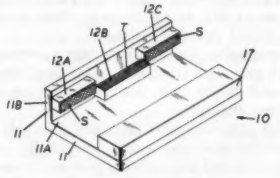
the drive unit being adapted to be fitted to the housing in driving engagement with the face plate in at least two mutually angularly offset positions.

4,280,378

SKI SHARPENER

Abraham I. Levine, 28 Wilson Ave., Rowayton, Conn. 06853

Filed Dec. 31, 1979, Ser. No. 108,657
Int. Cl.³ B21K *17/00;* **B23D** *67/12*
U.S. Cl. 76—83 **6 Claims**



1. A ski edge sharpener comprising a base member and file means mounted on said base member, said file means including a plurality of file sections staggered along said base member whereby said sections have complementary filing surface adapted to effect the simultaneous filing of the vertical and horizontal surfaces of a ski edge, said base member comprises a base portion and a connected side portion, said portions being disposed normal to one another and at least one file section being connected to said base portion in space relationship to said side portion, and at least one file section being connected to said side portion in spaced relationship to said base portion

whereby the spacing of said file sections is such that the respective filing surfaces of said files engage the vertical and horizontal surfaces of a ski edge.

4,280,379

REVERSIBLE RATCHET DRIVE

Kirk K. Chow, Farmers Branch, Dallas, Tex. 75234

Filed Jan. 11, 1980, Ser. No. 111,471
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—62 **9 Claims**

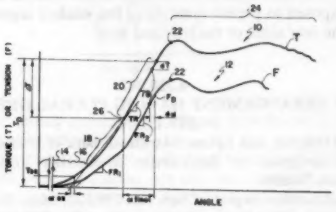
1. A reversible ratchet drive comprising
a handle-carried tool head including a driving ring,
a core having a generally cylindrical rotational body sleeved within and concentric with said ring,
a tool-element-engaging shank extending axially downwardly from said core,
said driving ring having a cylindrical inner surface,
an uninterrupted series of axially extending ratchet teeth formed in an evenly and circumferentially spaced around said inner surface of said ring and projecting radially inwardly thereof,
said body of said core having a transverse recess formed therein and extending radially inwardly of and from an encircling bounding periphery of said core,
a double-ended reversible pawl pivotally secured in said recess,
said pawl having ratchet teeth at each of its opposed ends, said ratchet teeth facing radially outwardly and presented toward said ratchet teeth of said driving ring for mating therewith,
rod means carried axially in said core and pivotally supporting said pawl in said recess for arcuate displacement of opposed toothed ends of said pawl radially inwardly and outwardly in said transverse recess in sequence, for selectively presenting either of said opposed toothed ends to said driving ring,
said ratchet teeth of said pawl being complementary with said teeth of said driving ring for selective independent ratcheting and driving engagement therewith, reversibly to impart rotative clockwise and counterclockwise torque-transmitting motion to said core upon rotation of said driving ring,
said pawl having a camming surface for application of pawl shifting pressure thereto,
said core being formed with slot means extending axially into said core from an upper surface thereof and intersecting said transverse recess formed therein,
said pawl actuating means for selectively pivotally shifting said pawl to each of a pair of opposed limiting positions correlated with reversible intercoupling ratcheting and driving engagement of each toothed end of said pawl with complementary mating teeth of said driving ring,
said pawl actuating means including shaft means projecting generally axially into said core through said slot means formed therein,
said shaft means reaching, at a lower end portion thereof, into a spatial zone adjacent said transverse recess,
finger-pressure-responsive means for manually pivoting said pawl,
said finger-pressure-responsive means including a finger contact portion projecting above a top surface of said core,
said finger contact portion being responsive to pressure applied thereagainst along a force vector having a component directed axially into said core and operative to effect a shift of said pawl alternately between first and second opposed limiting positions and reversibly and ratchetly to intercouple a toothed end of said pawl drivingly with mating said ratchet teeth of said driving ring.

4,280,380

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,364
Int. Cl.³ B23P *19/06*; B25B *23/14*; F16B *31/02*
U.S. Cl. 81—470 **9 Claims**



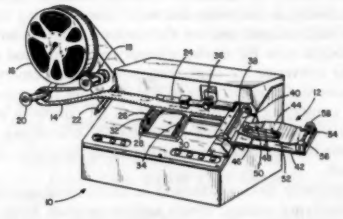
1. Apparatus for tightening a threaded fastener at least partially into a region of increasing fastener stress where the torque curve exhibited by the fastener is expected to be linear, comprising
means for applying torque to the threaded fastener;
means for stopping the torque applying means in the region of fastener stress; and
means operative after the termination of tigthening and prior to resumption of operation of the torque applying means for monitoring the fastener including
means for checking the curvature of the torque curve.

4,280,381

FILM TRAY ASSEMBLY FOR PHOTOGRAPHIC FILM CUTTER

Armer J. Willenbring, Edina; Warren J. Osby, and James W. Gausman, both of Minneapolis, all of MN, assignors to Pako Corporation, Minneapolis, Minn.

Filed Apr. 2, 1979, Ser. No. 25,754
Int. Cl.³ B65H *3/02*; B26D *7/00*; G03D *15/04*
U.S. Cl. 83—86 **10 Claims**



1. For use with a photographic strip cutter having knife means for cutting segments from a strip of photographic material, a device for stacking the segments comprising:

a tray having first and second ends, front and rear sides, and a first surface upon which the segments are stacked, the first end being positioned in a plane generally below and proximate the knife means;

an arm having first and second ends and front and rear sides and a first inclined surface which slopes from the first end of the arm toward the tray to deflect segments toward the tray and the arm being positioned in generally overlying position with respect to the tray to receive and hold the segments between the arm and the tray;

connecting means for connecting the arm and tray proximate their second ends and for limiting movement of the arm in directions transverse and parallel to the path of the segments as they are stacked between the arm and the tray, while permitting movement of the arm away from the tray; and

guide means for providing a guiding surface generally parallel to a path of the segments for guiding a front edge of the segments as they are stacked between the arm and the tray, the guide means being positioned with respect to the arm and the tray such that at least a portion of both top and bottom sides of a rear edge of the stacked segments is exposed to permit removal of the stacked segments from the rear sides of the tray and arm.

4,280,382

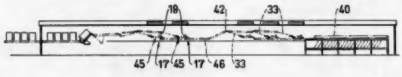
SAW ARRANGEMENT HAVING PLURAL OPERATOR STATIONS

Hans Hellgren, and Erland Marklund, both of Skelleftea, Sweden, assignors to Renholmens Mekaniska Verkstad AB, Byske, Sweden

Continuation-in-part of Ser. No. 889,527, Mar. 23, 1978, abandoned, which is a continuation of Ser. No. 717,264, Aug. 24, 1976, abandoned. This application May 10, 1979, Ser. No. 37,885

Claims priority, application Sweden, Aug. 27, 1975, 7509516

Int. Cl.³ B26D *7/06*

U.S. Cl. 83—106 **6 Claims**

1. An apparatus for trimming boards comprising

a first end cutting station for cutting off boards at a first end;

a second end trimming station for trimming boards at a second end to desired lengths;

conveying means defining a conveying path for moving boards in a direction transverse to the longitudinal axes of the boards sequentially to said first end cutting station and then to said second end trimming station and from said second station to a sorting conveyor of a sorting device;

said second end trimming station consisting of a plurality of separate trimming places arranged one after the other in said conveying direction, each one of said trimming places including a trimming saw means for trimming the boards at said second end to the desired lengths, an inclined storage zone for storing a supply of boards, and a collecting conveyor for conveying boards in a conveying path from said storage zone to the trimming saw means;

said conveying means including an aft conveyor extending below said collecting conveyor for conveying trimmed boards from said trimming places to the sorter conveyor; and

a distributor device arranged in an elevated section of the conveying means, which section extends from the first trimming place to the last trimming place of said second end trimming station, for distributing boards arriving at the second end trimming station to said separate trimming places in response to the amount of boards stored in the respective storage zones in the second end trimming station.

4,280,383

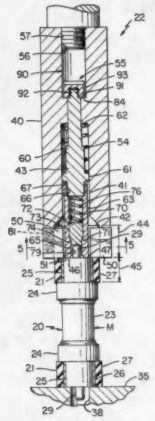
TEXTILE COT REMOVER

James S. Bryan, Clyde; Mayo B. Tell, Asheville; Alvin R. Brooks, Jr., Waynesville, and Ivan Gaster, Hazelwood, all of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Feb. 25, 1980, Ser. No. 124,509

Int. Cl.³ B26D *3/00*

U.S. Cl. 83—140 **11 Claims**



1. In a tool for cutting a textile cot from an associated mandrel, said tool having a cot cutting blade, the improvement comprising, a housing having an axial passage therethrough including an enlargement defining one end thereof, a mandrel-engaging assembly supported for reciprocating axial movements within said passage through a distance at least equal to the axial length of a cot to be cut by said tool, said assembly having a mandrel-engaging outer surface, means fastening said cutting blade to said housing, said cutting blade having cutting edge means disposed within said enlargement, urging means yieldingly urging said assembly at least said distance along said passage into said enlargement, stop means limiting the extent of movement of said assembly as induced by said urging means, and means for attaching said housing on one of a cooperating pair of machine components which are relatively movable toward and away from each other, said tool being adapted to be attached on said one component with said attaching means and a mandrel with a cot to be cut supported on said other component with said cot aligned to be received within said enlargement, said components being adapted to be relatively moved toward each other causing said outer surface of said assembly to engage said mandrel and causing said housing to override said urging means and telescope around said assembly enabling said cutting edge means to be moved axially along said cot thereby cutting same, said urging means serving to eject said cot and mandrel from within said enlargement once said components are relatively moved away from each other.

4,280,384

APPARATUS FOR CUTTING STRIPS OF MATERIAL OF VARYING LENGTHS

Volker Schmidt, Rte. 7, Lexington, Ky. 40502

Filed Feb. 23, 1979, Ser. No. 14,296

Int. Cl.³ B26D *7/06*

U.S. Cl. 83—234 **17 Claims**

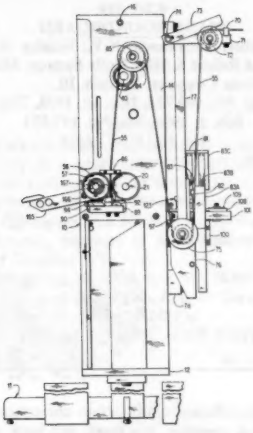
1. An apparatus for cutting a strip of material into segments including:

a single drive means;

feed means to intermittently feed a selected length of the strip of material past a cutting position during each activation of said feed means;

first means to cause said single drive means to activate said feed means during a portion of each cycle of said single drive means;

cutting means to cut the fed material at the cutting position while said feed means is inactive;



and enabling means to enable said single drive means to activate said cutting means while said feed means is inactive to cut the fed material at the cutting position only after a selected number, greater than one, of the selected length of the strip of material has been intermittently fed past the cutting position by said feed means during more than one activation of said feed means.

4,280,385

APPARATUS FOR CUTTING FOODSTUFFS OR THE LIKE

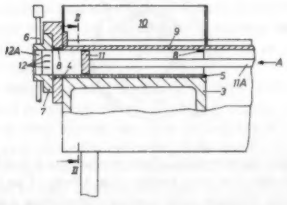
Arnold Kienzl, Heidenheim, Fed. Rep. of Germany, assignor to Holac-Maschinenbau GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jan. 5, 1979, Ser. No. 1,389

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 7804766[U]

Int. Cl.³ B26D *1/02, 7/06*

U.S. Cl. 83—404.3 **7 Claims**



1. In a comminuting apparatus, particularly for slicing and/or dicing foodstuffs, wherein the commodities to be comminuted are fed into and are advanced lengthwise along a predetermined path into the range of mobile comminuting elements, the combination of a support having a chamber; and an elongated open-ended trough consisting of stainless steel and removably installed in said chamber, said trough defining said path and having a substantially U-shaped cross-sectional outline with two upstanding side panels, a bottom panel between said side panels, an open top for admission of commodities to be comminuted, and webs connecting said side panels and extending transversely of said path adjacent to the ends of said trough and remote from said bottom panel.

4,280,386

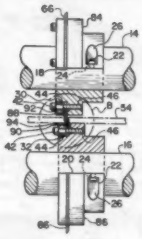
PAPERBOARD SLITTING APPARATUS

William F. Ward, Sr., Hampstead, Md., assignor to The Ward Machinery Company, Cockeysville, Md.

Filed Dec. 26, 1979, Ser. No. 106,541

Int. Cl.³ B23D *19/06*; B26D *1/24*

U.S. Cl. 83—500 **6 Claims**



1. Rotary slitting apparatus for slitting paperboard material comprising in combination:

an annular head member including a reduced diameter shoulder portion adjacent one side face thereof forming a first annular side face extending at a small angle of from between 3 degrees and 7 degrees from a line extending radially perpendicular from a central axis of said head member towards a larger diameter surface thereon;

a thin annular slitting blade member adjacent said first annular side face and including an inner annular surface surrounding said reduced diameter shoulder portion and having a plurality of circumferentially spaced notches extending radially part way from said inner annular surface toward an outer annular surface, said outer annular surface extending at an angle of from between 5 degrees and 40 degrees from a plane perpendicular to side faces thereof forming an acute angle cutting edge with one of said side faces; and

an annular clamp member including an inner annular surface surrounding said reduced diameter shoulder portion and having a second annular side face, adjacent said blade member, extending radially at an angle from a central axis of said head member so as to correspond to said small angle of said first annular side face for clamping said blade member at an angle against said first annular side face on said head member,

said head member further including an annular relief formed in said first annular side face opposite to the termination of said notches in said slitting blade member, and

said clamp member further including an annular relief formed in said second annular side face opposite to the termination of said notches in said slitting blade member.

4,280,387

FREQUENCY FOLLOWING CIRCUIT

Robert A. Moog, Leicester, N.C., assignor to Norlin Music, Inc., Deerfield, Ill.

Filed Feb. 26, 1979, Ser. No. 14,940

Int. Cl.³ G10H *1/00*; H04M *1/00*; G01R *23/02*

U.S. Cl. 84—1.01 **17 Claims**

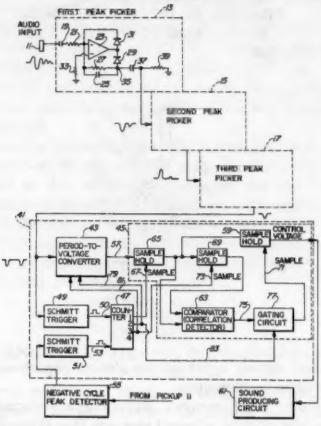
1. An electrical circuit apparatus for use in electronic music generation comprising:

means for providing an electrical input signal of complex waveform carrying a fundamental frequency component;

means for converting said input signal to a signal bearing

successive indications of the occurrence of a periodic reference point of the fundamental frequency component of said input signal;

period-to-voltage converter means responsive to said indications of the converted input signal, for repeatedly generating an analog voltage level, each said analog voltage level having a magnitude representative of the period between successive reference points; and



output means for producing a signal output having a signal level magnitude determined by a said analog voltage level, said output means making a determination of the relative difference of the signal level magnitudes of successive analog voltage levels generated by said period-to-voltage converter means, and said output means updating said signal output in response to said determination.

4,280,388

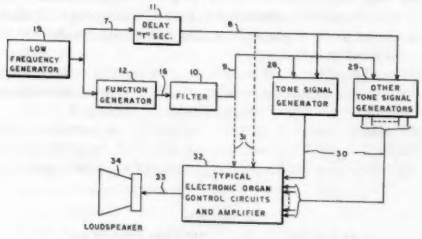
APPARATUS AND METHOD FOR GENERATING CHORUS AND CELESTE TONES

J. Paul White, 1985 Foster Rd., Hatfield, Pa. 19440

Filed May 29, 1979, Ser. No. 43,111

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.24 **9 Claims**



1. In an electronic musical instrument, apparatus for generating a chorus tone, comprising;

means to generate a low frequency signal,

delay means responsive to the said low frequency signal and operable to produce a first modulating signal by imparting a frequency-independent time delay to said low frequency signal,

a tandem means also responsive to said low frequency signal comprising a function generator feeding a non-minimum phase shift bandpass filter to produce a second modulating signal,

a tone signal generator,

means responsive to said first and second respectively modulating signals to modulate the amplitude and phase of the tone signal produced by said tone signal generator, and

means operable to render the amplitude and phase modulated tonesignal audible.

4,280,389

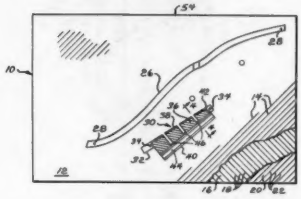
PIANO SOUNDBOARD

George S. Klaiber, Tonawanda, N.Y.; Stanley A. Grajek, De Kalb, Ill., and Robert S. Hill, Holly Springs, Miss., assignors to The Wurlitzer Company, DeKalb, Ill.

Division of Ser. No. 969,722, Dec. 15, 1978. This application Feb. 1, 1980, Ser. No. 117,574

Int. Cl.³ G10C *3/04*

U.S. Cl. 84—212 **6 Claims**



1. A piano soundboard construction comprising three plies of wood bonded together, the front and back ply being of approximately equal thickness and the center ply being of greater thickness than the thickness of the front or back ply, and a bass bridge comprising a runner secured to said front ply, an apron on said runner substantially parallel to the plane of the front ply and cantilevered from said runner, and a cap on said apron opposite to said runner, at least a part of said bass bridge having a plurality of spaced-apart transverse slots therethrough.

4,280,390

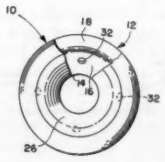
SEALING ELEMENT

Myles N. Murray, Chagrin Falls, Ohio, assignor to Industrial Electronic Rubber Co., Twinsburg, Ohio

Filed May 4, 1979, Ser. No. 36,022

Int. Cl.³ F16B *43/00, 39/24*

U.S. Cl. 411—542 **8 Claims**



1. A washer for use with a fastener having a head and shank, the shank of which is to be received in a bore of an article being secured by the fastener, said washer comprising a substantially rigid annular upset disc of an overall V-shape cross-section having radially inner and outer sidewalls that terminate at their distal ends substantially at a common plane normal to the axis of said disc, said distal ends defining the article opposing surface of said disc, a first annular elastomeric member positioned between and substantially contained against radial expansion by said sidewalls, and a second annular elastomeric member positioned interiorly of and substantially contained against radial outward expansion by said radially inner sidewall, said

first and second members protruding axially slightly beyond said disc in opposite axial directions for effecting engagement with the head and face, respectively, when said fastener is received in said bore and drawn against said washer, and said radially inner sidewall throughout the extent thereof being substantially inclined to the axis of said disc, whereby said radially inner sidewall resists axial movement of said second member upon tightening of the fastener thereagainst.

4,280,391

ARRANGEMENT FOR ANCHORING A MOUNTING ELEMENT IN A SUPPORT STRUCTURE AND MOUNTING AN OBJECT ON THE SAME

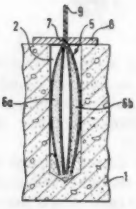
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, Tumlingen, Fed. Rep. of Germany, and Klaus Fischer, Waldachtal, Fed. Rep. of Germany, assignors to Artur Fischer, Waldachtal, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,407

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845107; Nov. 29, 1978, 2851558

Int. Cl.³ F16B *37/04*; B65D *79/00*; E21D *21/02*

U.S. Cl. 411—15 **20 Claims**



1. An arrangement for mounting an object to a support structure having a mounting hole and an outer face, comprising

a mounting element arranged to be inserted into and anchored in a mounting hole of a support structure and to support an object;

a flexible container accommodating an adhesive substance and arranged to be inserted into a mounting hole of a support structure prior to said mounting element for emptying into the mounting hole and to be subsequently withdrawn from the mounting hole, said flexible container having an inlet and inlet closure means separable from the remainder portion of said flexible container before insertion of the latter into the mounting hole so as to open said flexible container; and

means for emptying said flexible container in the mounting hole, said emptying means including a disc member arranged to abut against an outer face of the support structure so as to close the mounting hole and having a peripherally closed slot whose dimension corresponds to the thickness of said flexible container in emptied and folded conditions, so that when said disc abuts against the outer face of the support structure and said flexible container filled by the adhesive substance is pulled out from the mounting hole through said slot of said disc member, the mounting hole is sealed by said disc member and the adhesive substance accommodated in said flexible container is squeezed out from the latter into the mounting hole, so as to anchor said mounting element after its insertion in the mounting hole.

4,280,392

CARTRIDGE FEED APPARATUS FOR AN AUTOMATIC FIRING WEAPON

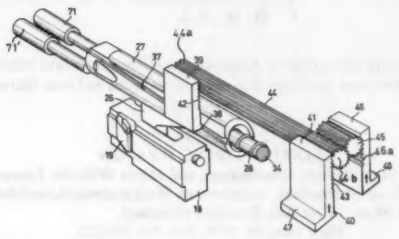
Ernst Hürlemann, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Sep. 4, 1979, Ser. No. 72,101

Claims priority, application Switzerland, Sep. 12, 1978, 9532/78

Int. Cl.³ F41D *10/08*

U.S. Cl. 89—33 SF **7 Claims**



1. A cartridge infeed apparatus for an automatic firing weapon, comprising:

two oppositely situated ammunition guide means for the selective infeed of two different ammunition belts to an ammunition infeed location;

a feed device capable of being driven by the breechblock of the firing weapon;

said feed device having a spring sleeve operatively connected with the breechblock;

said spring sleeve having a groove which is inclined with respect to the lengthwise axis of the firing weapon;

said feed device further including: a respective slide for each ammunition belt; feed pawl means with which each slide is operatively connected for moving both of the ammunition belts;

one of said slides being actuated by engagement with said groove and defining a first slide;

an additional slide defining a second slide and actuatable by engagement with said groove;

both of said first and second slides which can engage with said groove being arranged such that upon return movement of the spring sleeve initially the first slide and then the second slide comes into engagement with said groove;

the remaining one of said slides defining a third slide;

a first transmission element for transmitting the movement of the first slide to the second slide; and

a second transmission element for transmitting the movement of the second slide to the third slide.

4,280,393

LIGHT WEIGHT ARMORED VEHICLE

Jean Giraud, Versailles, and Richard Laigneau, Saint-Maur-des-Fosses, both of France, assignors to Creusot-Loire, Paris, France

Filed Apr. 9, 1979, Ser. No. 28,509

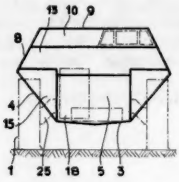
Claims priority, application France, Apr. 14, 1978, 78 11017; Apr. 6, 1979, 79 08734

Int. Cl.³ F41H *7/04*

U.S. Cl. 89—36 H **8 Claims**

1. An armored vehicle comprising a body having an outer profile, rolling members supporting said body, motor means, transmission means for transmitting drive from said motor means to said rolling members, said body comprising a main central cell having a volume reduced to that for containing occupants and at least selected vital elements of said motor means and transmission means, said main central cell comprising relatively thick highly armored plates and which include a floor of said central cell having a slight dihedron, and an exte-

rior protection extending from said main cell to complete the outer profile of said body, said exterior protection comprising



relatively thin armored plate, said exterior protection extending from said central cell at least at the front and rear thereof.

4,280,394

MARINE FIRING WEAPON

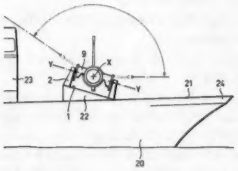
Emil Singenberger, Ennetbürgen, and Heinz Wilhelm, Lucerne, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Oct. 30, 1978, Ser. No. 956,221

Claims priority, application Switzerland, Nov. 4, 1977, 13432/77

Int. Cl.³ F41F *23/00*

U.S. Cl. 89—37 A **5 Claims**



1. A marine weapon system comprising:

means defining a first alignment axis which does not extend into the zenith;

means defining a second alignment axis which is arranged essentially at right angles to the first alignment axis;

support means mounted to be rotatable about the first alignment axis;

firing weapon means rotatably mounted at said support means for rotatable movement about said second alignment axis;

said first alignment axis being inclined with respect to the horizon such that it does not extend into a target region of the firing weapon means;

two support members for mounting said support means defining an inclined support;

said inclined support defined by said support means being arranged between said two support members and rotatably mounted at said two support members;

a substantially horizontal platform at which there are arranged said two support members; and

both of the support members arranged at said substantially horizontal platform being of different length.

4,280,395

HYDRAULIC BRAKE BOOSTER

Arthur R. Shaw, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1979, Ser. No. 68,895

Int. Cl.³ F15B *13/14, 13/10*

U.S. Cl. 91—47 **2 Claims**

1. A hydraulic power brake booster comprising:

a housing having a bore therein;

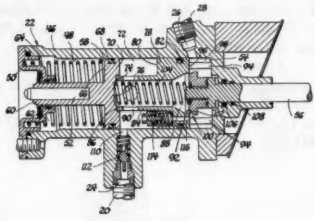
a power wall having a booster output member, said power wall being reciprocably received in said housing bore;

a valve piston reciprocably received in said housing bore and defining a power pressure chamber in combination with said power wall and a part of said housing, said valve piston also defining an exhaust chamber on the opposite side thereof from said power pressure chamber in combination with another part of said housing;

an input member extending through said exhaust chamber in axial alignment with said valve piston and said power piston;

a control valve defined by an annular valve seat on said valve piston and a movable valve element on said input member and including a passage in said valve piston passing through said annular valve seat, said passage providing fluid communication between said power and exhaust chambers as controlled by said control valve;

a hydraulic fluid inlet in said housing for delivering hydraulic fluid to said power chamber upstream of said control



valve and having a check valve therein for preventing fluid flow from said power chamber through said inlet, and a hydraulic fluid outlet in said housing for receiving hydraulic fluid from said exhaust chamber downstream of said control valve;

said booster being power actuated by movement of said input member to restrict hydraulic fluid flow through said control valve and cause power pressure to increase in said power pressure chamber, said power pressure moving said power wall and holding said valve piston against movement in the same direction as said power wall to require a small amount of input member movement to control said booster throughout its power range;

said booster being subject to manual push-through operation by movement of said input member which is sufficient to engage said movable valve element with said annular valve seat and thereafter move said valve piston and said power wall concurrently to move said output member as said input member is moved.

4,280,396

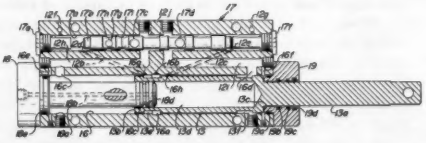
HYDRAULIC OSCILLATOR

Kenneth W. Zeuner, Newtown, and Alonzo B. Jarman, Wrightstown, both of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Filed May 18, 1978, Ser. No. 907,139

Int. Cl.³ F01L *25/06, 31/08*

U.S. Cl. 91—320 **14 Claims**



1. A hydraulic oscillator comprising a piston reciprocating

between first and second positions in a cylinder having first and second opposed ends,

reversing pilot valve means operable in response to the application of pilot fluid flow for controlling flow of fluid to said first and second cylinder ends, first and second pilot passages for controlling the reversing operation of said pilot valve means,

said cylinder having pilot channel means including a single circumferential pilot pressure groove formed on a cylinder wall for flow of said pilot fluid, and

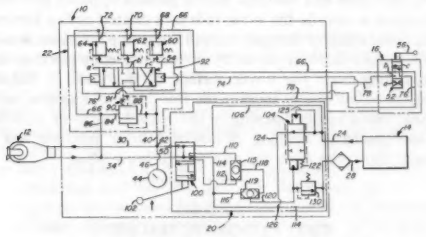
said piston having (1) first coupling means for fluidly coupling said single pilot groove and said first pilot passage as said piston approaches said second position and (2) second coupling means free of fluid communication with said first coupling means for fluidly coupling said single pilot groove and second pilot passage as said piston approaches said first position thereby to alternately reverse said pilot valve means to reverse the fluid flow to said first and second cylinder ends for producing the reciprocation of said piston.

4,280,397

HYDRAULIC FLUID CONTROL APPARATUS

John E. Peveto, Houston, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Apr. 27, 1978, Ser. No. 900,545
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—452 **2 Claims**



1. Power tong apparatus comprising

hydraulic fluid control apparatus and a drill string power tong with said hydraulic fluid control apparatus having

hydraulic fluid entry means for receiving hydraulic fluid,

hydraulic fluid discharge means for supplying pressurized hydraulic fluid,

said hydraulic fluid discharge means includes means for supplying said pressurized hydraulic fluid to said power tong and hydraulic fluid return means for receiving pressurized fluid returning from said power tong to said hydraulic fluid control apparatus,

velocity control means cooperating with said hydraulic fluid entry means for establishing a desired predetermined velocity for the hydraulic fluid,

pressure control means cooperating with said hydraulic fluid discharge means for selectively limiting the exit pressure of said hydraulic fluid through said discharge means to predetermined levels,

said pressure control means including valve means adapted to divert pressurized fluid from said hydraulic fluid discharge means when the pressure thereof exceeds one of two or more predetermined levels,

said valve means includes at least two valves adapted to be set at different said predetermined pressure levels,

valve control means for selectively setting the position of said valve means to establish a said predetermined pressure level in said hydraulic fluid discharge means, and

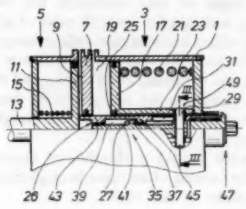
said valve control means includes a three-position valve.

4,280,398

RAPID RELEASE MECHANISM FOR A SPRING-LOADED BRAKE CYLINDER

Albert Kerscher, Eching, and Walter Furtner, Rosenheim, both of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,230
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800449
Int. Cl.³ F01B *9/00*
U.S. Cl. 92—29 **5 Claims**



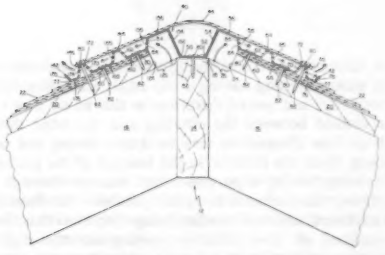
1. In a spring-loaded brake cylinder, a cylinder having a spring-loaded piston therein movable between release and braking positions, piston rod means relatively movable with respect to said piston, a piston rod head adapted to be connected to a brake linkage and actuatable by said piston rod means, a releasable coupling operatively connecting said piston and said piston rod means, and means in parallel with said releasable coupling for damping relative movement between said piston and said piston rod means resulting when said releasable coupling is released, wherein said damping means comprises a chamber defined by portions of said piston and said piston rod means and filled with fluid, and a fluid displaceable member on one of said piston and said piston rod means to moderate any impact force between said piston and said piston rod means as a result of the relative movement therebetween.

4,280,399

ROOF RIDGE VENTILATOR

Joseph M. Cunning, Cohasset, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.

Filed May 29, 1980, Ser. No. 154,386
Int. Cl.³ F24F *7/02*
U.S. Cl. 98—42 A **3 Claims**



1. For use with a building roof ridge having a ridge pole supported on each side by rafters extending to said ridge pole spaced therealong and sloping downwardly therefrom, with sheathing and roof shingles supported by said rafters and having their inner longitudinal edges spaced from said ridge pole to provide a building roof vent extending longitudinally along at least one side of said ridge pole,

a flexible, one-piece, roof ridge ventilator adapted for mounting transversely across said roof ridge with its outer longitudinal edges spaced transversely outwardly from said ridge pole for supporting thereon a longitudinally and

transversely extending cap shingle with its longitudinally extending outer edges spaced above and transversely overlapping said roof shingles on both sides of said ridge pole for ventilation of said building through said roof vent said roof ridge ventilator having

a plurality of longitudinally extending peaks and valleys with side walls extending therebetween, including a central valley adapted for mounting on said ridge pole, for centering said ridge ventilator sheet transversely across said roof ridge with side peaks and valleys extending from said ridge pole for a substantial distance to the outer longitudinal edges of said ventilator for overlapping said sheathing and shingles on both sides of said ridge pole

said central valley and said side valleys having nail apertures therein for securing said ridge ventilator onto said ridge pole and said sheathing and shingles and the outermost of said side peaks having nail apertures therein adapted to receive nails for securing said cap shingle to said ridge ventilator, and

said side walls having a plurality of venting perforations therein for venting of air therethrough from said roof vent to the exterior of said roof.

4,280,400

FUME CUPBOARDS

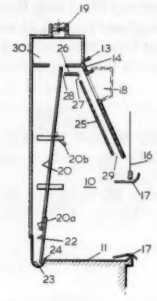
Archibald L. Longworth, Mirador, Woodbrook Rd., Alderley Edge, Cheshire, England

Filed May 25, 1979, Ser. No. 42,666

Claims priority, application United Kingdom, May 30, 1978, 24508/78

Int. Cl.³ F23J *11/00*

U.S. Cl. 98—115 LH **11 Claims**



5. A fume cupboard comprising a ventilated enclosure having an access opening having a top edge, a cowling located over said edge and spaced therefrom so that an air-flow channel is defined between the cowling and the edge through which air-flow channel air may be drawn during use of the cupboard, from the exterior to the interior of the enclosure, said cowling having a portion which extends through said opening into the enclosure in a plane parallel to the base of the fume cupboard, and said cowling being shaped so that there is a streamlined air flow over the cowling into the enclosure when the cupboard is in use, and wherein said opening is closable by a sash window and said cowling is provided along the bottom edge of the sash window.

6. A fume cupboard comprising a working enclosure with a rear wall, side walls, a ceiling, a floor and an access opening, a back baffle located in front of the rear wall and having its side and lower edges defining air-exit slots with the interior of the enclosure, a front baffle located rearwardly of the front wall, said front baffle having side edges defining air exit slots with the side walls of the enclosure, an upper edge providing an upper air slot, and a lower edge defining, with said front wall, a lower air slot above the access opening.

4,280,401

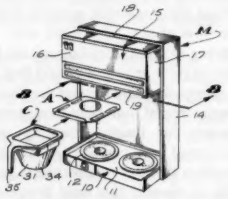
BREW RAIL ADAPTER

Robert K. Cleland, 11051 Via El Mercado, Los Alamitos, Calif. 90720

Filed Nov. 13, 1979, Ser. No. 93,385

Int. Cl.³ A47J *31/10*

U.S. Cl. 99—295 **7 Claims**



1. A brew cone adapter engageable with a bottom surface of a water dispensing head of a coffee brewing machine to underlie a water discharge opening in that head and engageable with and between a pair of elongate laterally spaced parallel horizontal brew rails carried by the head below said surface and to slidably receive and support the upper rim flange of an upwardly opening cup-like brew cone, the lateral extent of which is less than the lateral space between said brew rails; said adapter includes a thin, flat, horizontal substantially rectangular plate with substantially flat, upper and lower surfaces, front and rear ends and laterally spaced parallel opposite side edge portions to overlie the brew rails of a related coffee brewing machine, a pair of elongate laterally spaced parallel brew cone rails spaced laterally inwardly of said side edge portions and depending from the lower surface of the plate to slidably engage below and to support the rim flange of a related brew cone, and a center opening in the plate to register with the water discharge opening of a related brew machine and to occur above the open top of a related brew cone.

4,280,402

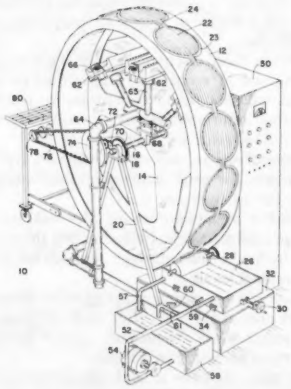
CREPE COOKING MACHINE

Garnet I. Featherstone, 12 Mark Dr., San Rafael, Calif. 94903

Filed Aug. 20, 1979, Ser. No. 67,602

Int. Cl.³ A47J *37/10*; A21B *1/42*

U.S. Cl. 99—355 **13 Claims**



1. A crepe cooking machine comprising:

a generally cylindrical, metallic drum;

a row of generally circular, metallic cooking pads around the circumference of said drum;

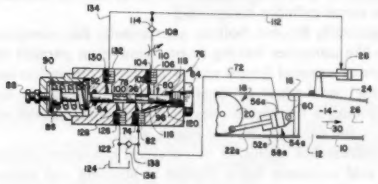
a source of heat within said drum adjacent the interior surface thereof;
a container for batter adjacent said drum;
a transfer roller rotatable in said container;
a base;
a support platform movable on said base toward and away from said drum;
biasing means urging said platform towards said drum; and
cam follower means on said platform engaging the outer surface of said drum to maintain a constant spacing therefrom;
said batter container being supported on said platform.

4,280,403

BALE DENSITY CONTROL SYSTEM

Loren L. Alderson, Nickerson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Aug. 13, 1979, Ser. No. 66,218
Int. Cl.³ B30B *15/26*
U.S. Cl. 100—43 **1 Claim**



1. A bale density control system on a conventional reciprocating plunger-type baler with a squeeze cylinder to control the size of the discharge orifice, the baler being driven by a pitman rod and crankshaft, the system adjusts the squeeze cylinder of the baler to maintain bale density regardless of changing conditions in the material being baled, the improvement comprising:
a linear hydraulic cylinder means positioned between the crankshaft and the plunger with the piston rod of the cylinder means comprising an extension of and being the pitman rod and the cylinder means being hydraulically connected to the squeeze cylinder, said cylinder means being attached so that any load on the pitman rod is transmitted to the cylinder means causing the cylinder means to pump oil to the squeeze cylinder during the entire compaction stroke of the plunger thereby effecting a lost motion between the crankshaft and plunger;
a fluid supply means connected to said cylinder means for replenishing fluid in the cylinder means during the return stroke of the plunger and a check valve positioned between the supply and cylinder means to prevent flow to the supply means; and
a pilot operated valve means located between the cylinder means and squeeze cylinder which passes flow from the cylinder means to the squeeze cylinder at pressures below a prearranged level while blocking flow from the cylinder means to the squeeze cylinder at said prearranged level and dumping fluid in the squeeze cylinder to drain when the pressure in the linear cylinder means exceeds said prearranged level.

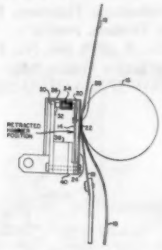
4,280,404

PRINTER HAVING VARIABLE HAMMER RELEASE DRIVE

Gordon B. Barrus, El Segundo, and Jerry Matula, Westminster, both of Calif, assignors to Printronix, Inc., Irvine, Calif.

Filed Oct. 3, 1979, Ser. No. 81,559
Int. Cl.³ B41J *7/92*
U.S. Cl. 101—93.03 **8 Claims**

1. A hammer bank arrangement for use in a dot matrix printer comprising the combination of a reciprocable hammer bank disposed along a printing line position and having a plurality of hammers, each of which includes a dot printing element for imprinting a dot when the hammer is actuated, a separate driving arrangement associated with each hammer for actuating the associated hammer when driven, means for periodically providing data denoting individual hammers to be actuated substantially simultaneously and means responsive to the data for driving the driving arrangement associated with



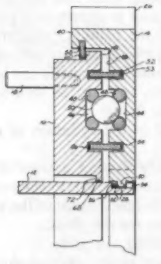
each hammer to be actuated as denoted by the data, means responsive to each providing of data denoting individual hammers to be actuated substantially simultaneously for determining the number of hammers to be actuated, and the means for driving including means responsive to the means for determining the number of hammers to be actuated for varying the duration of driving of each driving arrangement associated with each hammer to be actuated in substantially direct proportion to the number of hammers to be actuated.

4,280,405

ASSEMBLY FOR SUPPORTING PRINTING SCREEN

Johann Dreml, Franklin, N.C., assignor to Peterzimmer America, Inc., Spartanburg, S.C.

Filed Sep. 27, 1979, Ser. No. 79,594
Int. Cl.³ B41F *15/38*
U.S. Cl. 101—127.1 **3 Claims**



1. An assembly for supporting cylindrical screens used in printing fabrics and the like, cylindrical couplings extending out opposed ends of said screens, said assembly comprising:
a cylindrical screen supporting ring;
means for connecting said cylindrical coupling carried on an end of said screen to said cylindrical screen supporting ring;
a cylindrical tension ring carried in axial alignment with said cylindrical supporting ring with said tension ring and said supporting ring having inner walls nesting together;
a cylindrically extending cavity provided in said inner walls of said tension ring and said supporting ring;
bearing means carried in said cavity for permitting said screen supporting ring to rotate relative to said tension ring and forming a separation between said supporting ring and said tension ring;

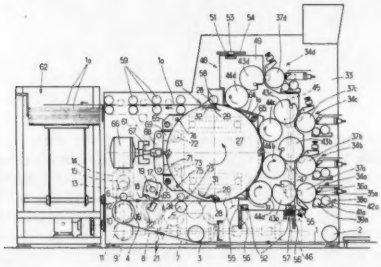
seal means carried on opposite sides of said bearing means,
an outwardly projecting flange carried on a peripherial edge of said tension ring adjacent said separation, and
an arcuate surface provided on an opposite side of said flange from said gap for directing contaminants away from said separation.

4,280,406

ROTARY PRINTING MACHINE

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans, France

Filed Mar. 5, 1979, Ser. No. 17,467
Claims priority, application France, Mar. 10, 1978, 78 07032
Int. Cl.³ B41F *5/18, 5/22, 13/36, 13/40*
U.S. Cl. 101—177 **8 Claims**



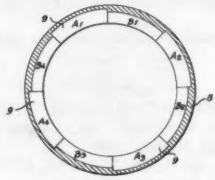
1. A rotary printing machine for multi-color printing continuously fed sheets, comprising:
a frame on which a plurality of printing units are mounted on one another, ensuring respectively the printing of the different colors;
each said printing unit comprising an inking unit and a plurality of ink transfer rollers having horizontal axes transverse to said frame, said ink rollers being tangential to one another and including an inking roller receiving a film of ink, a plate cylinder, a blanket cylinder for contact with the sheets, said inking units and the inking rolls being mounted on said frame in determined positions, and said plate cylinders and the blanket cylinders of the various printing units being mounted to rotate together on a first support frame movable horizontally and transversely with respect to the frame, so as to be able to be completely withdrawn from the frame;
means for rotating all of the cylinders of each of the said printing units;
means for continuously feeding a web of material to be printed and for introducing it into the printing machine;
means for regulating the linear speed of the web as a function of the format desired for the sheets;
a rotary device for cutting the web;
means for rotating said rotary cutting device at constant speed so as to cut from the web successive sheets of adjustable constant format;
a drum provided at its periphery with regularly distributed grippers, normally closed by springs, the opening of said grippers being controlled by fixed ramps on said frame, said grippers being adapted to grip the front edge of each sheet separated by said rotary cutting device, wherein said drum forms a single large diameter impression cylinder in contact, at different points of its periphery, with the blanket cylinders of said different printing units, said drum being mounted to rotate about a horizontal axis transverse to said frame on a second support frame, said second support frame being mounted for horizontal and longitudinal sliding movement with respect to said frame; and,
means for sliding the said second support frame towards and away from the blanket cylinders of the said plurality of printing units.

4,280,407

EXPLOSIVE PACKAGE ASSEMBLY

John R. Allen, Dollard Des Ormeaux; Louis-Georges Desrochers, Beloeil, and Alain Loyer, Otterburn Park, all of Canada, assignors to C-I-L Inc., Montreal, Canada

Filed May 21, 1979, Ser. No. 40,776
Int. Cl.³ F42B *1/02*
U.S. Cl. 102—320 **6 Claims**



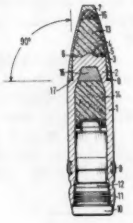
1. A metal welding explosive charge in the form of a package adapted for placement against the inner curved surface of a hollow metal cylinder comprising:
(a) a generally flexible, hollow, substantially flat, elongated, box-like container having in one dimension parallel side edges of unequal length and in a second dimension non-parallel side edges of equal length, the container thus describing a trapezoidal shape in plan with parallel side edges and non-parallel end edges, and
(b) a deformable explosive composition contained therein, the said container being fittable in abutting end contact with a like container along a non-parallel side edge, the said abutted container forming a continuous, length-adjusted closed ring assembly of packages against a curved metal surface to be explosively welded.

4,280,408

PROJECTILE

Adolf Weber, Neunkirchen; Siegfried Rhau, Nuremberg, and Utz-Udo Ahlers, Diepersdorf, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,248
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824703
Int. Cl.³ F42B *11/14*
U.S. Cl. 102—501 **9 Claims**



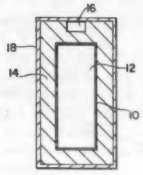
1. An antiaircraft projectile having a ballistic projectile hood (**7**) and a first pyrotechnic composition (**13**) with a primer charge (**15**) arranged below said hood, a penetrating member (**1**) which is open at its base and having two gripping edges (**6, 17**) at the outer circumference of cylindrical sections (**1, 2**) a base detonator (**12**) for a second pyrotechnic composition (**14**) arranged in said penetrating member (**1**), and an insert (**16**) located in the head portion of said penetrating member (**1**) formed of metallic zirconium.

4,280,409

MOLTEN METAL-LIQUID EXPLOSIVE DEVICE

Alexander G. Rozner, Potomac, and Horace H. Helms, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 9, 1979, Ser. No. 28,478
Int. Cl.[3] F42B 1/00
U.S. Cl. 102—364 17 Claims



1. A molten metal-liquid explosive device comprising:
(1) a metal liner composed of a metal selected from the group consisting of aluminum, magnesium, copper, and brass, the liner enclosing a chamber;
(2) water contained in the chamber;
(3) pyrotechnic material surrounding the outside of the liner, the pyrotechnic material comprising a mixture of powders of
(a) nickel,
(b) metal oxide, and
(c) an aluminum containing component selected from the group consisting of (i) aluminum and (ii) a mixture of from 50 to less than 100 weight percent of aluminum and from more than zero to 50 weight percent of a metal selected from the group consisting of magnesium, zirconium, bismuth, beryllium, boron, tantalum, copper, silver, niobium, tungsten, molybdenum, and mixtures thereof,
wherein the pyrotechnic material is present in an amount sufficient to melt the metal liner; and
(4) means for igniting the pyrotechnic material.

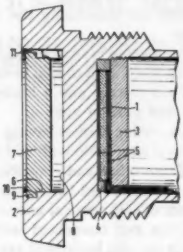
10. An molten metal-liquid explosive device which operates while submerged in a liquid comprising:
(1) a metal liner composed of a metal selected from the group consisting of aluminum, magnesium, copper, and brass, the liner enclosing an empty chamber;
(2) a pyrotechnic material surrounding the outside of the liner, the pyrotechnic material comprising a mixture of powders of
(a) nickel,
(b) metal oxide, and
(c) an aluminum containing component selected from the group consisting of (i) aluminum and (ii) a mixture of from 50 to less than 100 weight percent of aluminum and from more than zero to 50 weight percent of a metal selected from the group consisting of magnesium, zirconium, bismuth, beryllium, boron, tantalum, copper, silver, niobium, and mixtures thereof,
wherein the pyrotechnic material is present in an amount sufficient to melt the liner; and
(3) means for igniting the pyrotechnic material;
(4) a protective casing surrounding the metal liner, pyrotechnic material, and ignition means; and
(5) means to allow the liquid to flow into the chamber when the explosive device is submerged in the liquid.

4,280,410

ELECTRICAL PROJECTILE DETONATOR

Peter Weidner, Breitenbrunn, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,463
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847548
Int. Cl.[3] F42C 11/02
U.S. Cl. 102—210 8 Claims



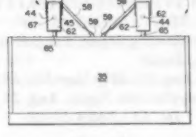
1. In an electrical projectile detonator, particularly a base detonator; a piezoceramic cell forming a current generator; and a pyrotechnic charge providing a gas pressure for generating a voltage in said cell; the improvement comprising: means for retaining said piezoceramic cell in contact with the interior of the projectile base; and a rupture plate being arranged exteriorly of the projectile base at a spacing from said cell, said rupture plate being subjected to the gas pressure of the projectile propellent charge so as to disintegrate and generate a shockwave in said projectile base for exciting said piezoceramic cell.

4,280,411

AERIAL CAR SUSPENSION

Shinji Katayose, Tokyo; Yukiyoshi Sasabe, Yokohama; Yoshiaki Yokota, Yokohama; Junsuke Kuroki, Yokohama, and Shuuji Torii, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 11, 1980, Ser. No. 111,257
Claims priority, application Japan, Jan. 25, 1979, 547734
Int. Cl.[3] B61B 3/06, 7/06; B61C 13/06
U.S. Cl. 104—112 16 Claims



1. An aerial transport system having an aerial track defining a way along which a carriage travels, the carriage being suspended from said aerial track by a suspending member which includes at least one beam connected with a wheel supporting frame in a pivotal position about a vertical axis to the wheel supporting frame and said beam connected with a hanger supporting the carriage in a pivotal position about a substantially horizontal axis,
wherein the improvement comprises:
joining means interposed between a lower end of said hanger

and said carriage and having both vertical and horizontal axes,

whereby said wheel supporting frame, beam, hanger and carriage are respectively universally pivotable in the yaw direction and the pitch direction with respect to each of the elements connected thereto.

4. An aerial transport system including an aerial track defining a way along which a carriage travels, the carriage being suspended from said aerial track to rotate in the yaw and pitch directions with respect to the track,

wherein a structure for suspending the carriage from the track comprises:

a plurality of beams located in spaced apart relationship with respect to one another, each of said beams having vertical axes on both ends thereof and a horizontal axis on the transversely central portion thereof;

a pair of wheel supporting frames having one end rotatably supporting a wheel engagable with said track and rotating therealong, and the other end rotatably connected with both ends of each beam, said frame being rotatable in the yaw direction about said vertical axis of said beam; and

a hanger having one end connected with said beam and being rotatable about said horizontal axis of said beam and the other end provided with joining means which has both vertical and horizontal axes and through which said other end is connected with said carriage so that said carriage is universally rotatable in yaw and pitch directions about said vertical and horizontal axes of said joining means.

10. In an aerial transport system having an aerial track such as a cableway and a carriage travelling along the track, a structure for suspending the carriage from the track including a beam, both ends of which are pivotally connected to a plurality of frame supporting wheels, said frames being rotatable in a yaw direction about yaw axes with respect to said beam, and a hanger, the upper end of which is connected to said beam in a pivotable position in a pitch direction about a pitch axis with respect to said beam,

the improvement comprising, in combination:

a plurality of separated beams being positioned apart from one another and linked to respective opposing ends by link members in alignment;

a pair of frames respectively connected to both ends of each of said beams in a pivotal position with respect to said beams about respective yaw axes;

one wheel being mounted on each of said frames; and

joining means provided on the lower end of said hanger and having yaw and pitch axes so that said joining means connects said carriage to said hanger in a universally pivotable position in the yaw and pitch directions.

4,280,412

INDEPENDENT SUSPENSION SYSTEM FOR ATTRACTION TYPE MAGNETICALLY FLOATED TRAVELLING BODY

Kiyoshi Mihirogi, Odawara, Japan, assignor to Japan Air Lines Co., Ltd., Tokyo, Japan

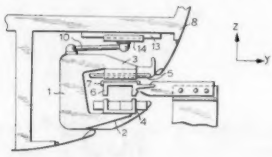
Filed Aug. 22, 1979, Ser. No. 68,957
Claims priority, application Japan, Aug. 24, 1978, 53-103296
Int. Cl.³ B61B *13/08*
U.S. Cl. 104—281 **5 Claims**

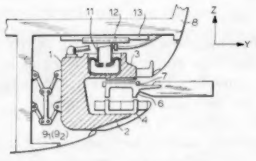
1. In an attraction type magnetically floated travelling vehicle of the type including a travelling body adapted to move along a pair of rails, a plurality of modules suspendedly mounted on said body at positions to confront said rails, each said module having elecromagnet means for floating said modules and said body with respect to said rails, motive means on each said module for moving said modules and said body along said rails, and suspension means for connecting each of said modules to said body, the improvement wherein said suspension means includes, for each said module:

first and second buffer devices connected to said module at front and rear ends thereof, respectively, each said buffer device including a lower end immovably attached to an upper part of said module and an upper end;

first mounting members attached to an undersurface of said body for movement therealong in opposite directions laterally of the longitudinal direction of movement of said body along said rails, said upper end of each said buffer device being fixed to a respective said first mounting member, such that said buffer devices and said module are movable relative to said body in said opposite lateral directions;

first and second thrust links, each said thrust link having first and second ends, said first ends of said first and second





thrust links being pivotally connected to said upper part of said module adjacent said front and rear ends thereof, respectively, said first and second thrust links extending from said pivoted first ends thereof substantially symmetrically toward a central portion of said module; and

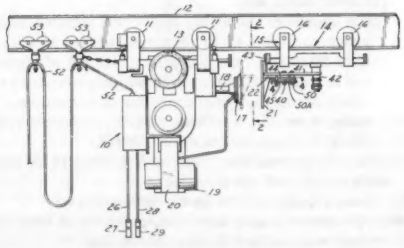
a second mounting member attached to said undersurface of said body for movement therealong in said opposite lateral directions, said second ends of said first and second thrust links being pivotally connected to said second mounting member, such that said thrust links and said module are movable relative to said body in said opposite lateral directions and in opposite vertical directions.

4,280,413

CONVEYOR SYSTEM

Douglas M. Kerr; Thomas L. Crandall, and Daniel J. Scalf, all of Fairfield, Iowa, assignors to Acco Industries Inc., Trumbull, Conn.

Filed May 21, 1979, Ser. No. 40,541
Int. Cl.³ B61B *3/02*; B61G *5/00, 7/12*
U.S. Cl. 105—150 **9 Claims**



1. A conveyor system comprising

a motor power unit,

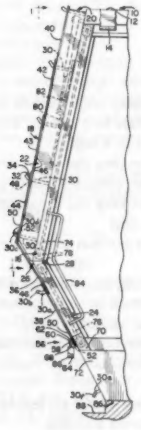
a load carrier,
a track along which said motor power unit and load carrier can move,
a vacuum pad mounted on said motor power unit and extending rearwardly,
a vacuum power unit on said motor power unit for applying vacuum to said vacuum pad,
and a plate extending forwardly of said load carrier and adapted to be engaged by said vacuum pad whereby when said vacuum pad engages said plate and is activated, a coupling is provided between said motor power unit and said load carrier so that the motor power unit will move said load carrier along said track,
said vacuum pad having its axis extending longitudinally of said motor power unit and said plate comprising a flat surface at a substantially right angle to the axis of said load carrier,
means for mounting said plate for limited pivotal movement about a vertical axis relative to said load carrier,
said last-mentioned means comprising a bracket, on which said plate is mounted, pivoted about a vertical axis on said load carrier, and means normally yieldingly urging said plate to a position where its plate is at a right angle to the axis of the load carrier,
said last-mentioned means comprising a pair of pivot bars pivoted on the same axis as said bracket and relative to said bracket, spring means yieldingly urging one end of said pivot bars toward one another, each said pivot bar having means thereon engaging said bracket under the action of said spring means, and means on said load carrier limiting the movement of the other ends of said pivot bars toward one another.

4,280,414

ANTI-VANDALISM, SECTIONALIZED PANEL, OUTSIDE METAL GUARD FOR WINDSHIELD

Roger S. Allshouse, Plainfield, and Donald C. Marek, Hickory Hills, both of Ill.

Filed Nov. 2, 1979, Ser. No. 90,773
Int. Cl.[3] F41H *5/00;* E06B *3/30*
U.S. Cl. 109—49.5 **14 Claims**



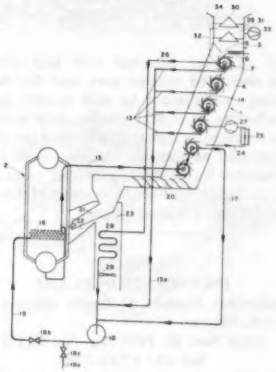
1. Windowframe structure (24) having, at least at the top and the opposite adjoining sides (26) of the frame opening, a generally U-shaped, outwardly projecting cowl (20);
a sectionalized panel (18) of imperforate metal closing off the outer end of the cowl; and
a plurality of pairs of J-hooks (30) secured to said opposite sides of the frame opening and to the adjacent portions of the U-shaped cowl, said hooks having hook portions projecting outwardly beyond the cowl and suspending sections of said panel hooked thereon so that they are outwardly offset from the frame opening, and in sectionalized contiguously overlapped relation to mutually form an uninterrupted imperforate window guard.

4,280,415

METHOD AND APPARATUS FOR DRYING AND PROCESSING MOISTURE-CONTAINING SOLIDS

Joseph M. Wirguin, 40 King George St., Jerusalem, and Avraham Melamed, 31 Haoranim St., Kfar Shmaryahu, both of Israel

Filed Jan. 23, 1979, Ser. No. 5,835
Claims priority, application Israel, Jan. 23, 1978, 53871
Int. Cl.[3] F23G *5/04*
U.S. Cl. 110—224 **25 Claims**



1. An energetically cross-linked process for the drying and thermal processing of moisture containing solids comprising the steps of:
(a) heating the moisture containing solids to a temperature below that of the decomposition of any organic component thereof so as substantially to dry the solids by evaporating out the moisture content thereof;
(b) condensing the vapours from step (a) at least partially in indirect heat exchange with the moisture containing solids and thereby transferring part of the enthalpy of these vapours to the moisture containing solids so as to contribute to the heating of step (a);
(c) upgrading the enthalpy of the condensate formed in step (b) by utilisation of the heat generated or released in the energetically cross-linked processing stage;
(d) utilising at least part of this upgraded enthalpy for completing the heating in step (a) and utilising any residual upgraded enthalpy in the energetically cross-linked processing stage; and
(e) carrying out the thermal processing of the solids dried in step (a).

4,280,416

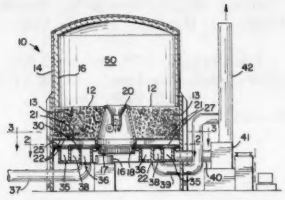
ROTARY VALVE FOR A REGENERATIVE THERMAL REACTOR

Philip Edgerton, 408 Swedesford Rd., Gwynedd Valley, Pa. 19437

Filed Jan. 17, 1980, Ser. No. 112,724
Int. Cl.[3] F28D *17/00;* F23G *7/06*
U.S. Cl. 110—254 **9 Claims**

8. A thermal regenerative pollution control apparatus having a plurality of adjacent heat exchange chambers mounted adjacent a purification chamber, an inlet conduit and an exhaust conduit, and a valve for controlling the flow of pollution,

said valve comprising a stationary plate, a rotating plate and a drive means, said stationary plate having a plurality of inlet and exhaust ports formed therein to provide for communication of selected ones of said heat exchange chambers with said inlet conduit through an associated inlet port and with said exhaust conduits through an associated exhaust port, said rotating plate having an inlet opening for communication of a first heat exchange chamber with said inlet conduit through the associated inlet port and an exhaust opening for communication of a



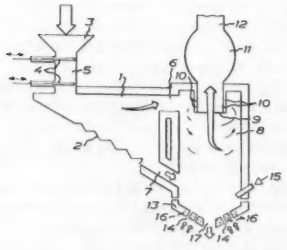
second heat exchange chamber with said exhaust conduit through the associated exhaust port, said first heat exchange chamber being nonadjacent to said second heat exchange chambers, whereby when said rotating plate is rotated by said drive means it acts to automatically control the flow of pollutant gases into said purification chamber from said first heat exchange chamber for preheating of said gases and into said second heat exchange chamber for cooling of the effluent gases prior to transfer into the atmosphere.

4,280,417

INCINERATION PLANT

Sven Alexandersson, Risskov, Denmark, assignor to Bruun & Sörensen AB, Sweden

Filed Nov. 28, 1979, Ser. No. 98,178
Int. Cl.[3] F23G 7/00
U.S. Cl. 110—346 **12 Claims**



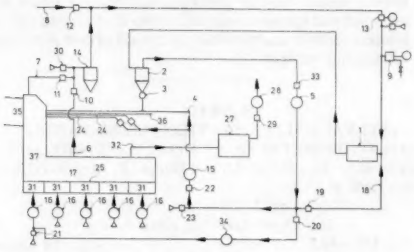
1. A process for combustion of combustion material of heterogeneous nature, using a first chamber for burnout and degassing of the combustion material and a second chamber, communicating with the first chamber, for final combustion and melting of the residual products from the first chamber, characterized by the following steps:—continuously keeping the first chamber (1) closed during operation and also during introduction of combustion material thereinto and supplying to said chamber a controlled amount of combustion air so adjusted that a pyrolitic process will take place therein during which gas is discharged from the combustion material which burns together; transferring incompletely burnt gases expelled from the combustion material, together with gas-borne particles and the like, from the first chamber (1) to the second chamber (8), through a per se known first passage (6) situated in the upper part and opening essentially tangentially into the second chamber, and transferring the burnt-together, partly melted-together remainder of the combustion material from the first to the second chamber, through a second passage (7) situated in the lower part, while the gases which, under the influence of the position of the first passage produce a circulatory motion, in addition to burnout of carried particles and the like, during the combustion in the second chamber cause heating to melting temperature of the material present in the lower part of the chamber (8); and, if required, supplying additional heat to said lower part in order to reach the temperature required for maintaining a melt; and, while the melt is being stirred in the lower part of the chamber, supplying air or oxygen to the melt in order to effect decarbonization of it.

4,280,418

METHOD OF COMBINING IN-THE-MILL DRYING AND FIRING OF COAL WITH ENHANCED HEAT RECOVERY

Helmut Erhard, Mason City, Iowa, assignor to Heidelberger Zement Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,631
Int. Cl.[3] F23D 1/00
U.S. Cl. 110—347 **12 Claims**



1. A method for using solid fuel to heat a kiln which discharges heated materials to a cooler, comprising:
pulverizing the fuel in a mill;
pneumatically conveying the pulverized fuel to a separator for separating fuel particles from fuel-dust-laden air;
pneumatically conveying the separated fuel particles to the kiln for burning; and
conveying at least a portion of the fuel-dust-laden air to the cooler.

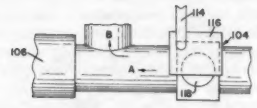
9. A method for using coal to heat a kiln which discharges heated clinkers to a grate in a clinker cooler, comprising:
pulverizing the coal in a coal mill;
pneumatically conveying the pulverized coal to a cyclone;
separating coal particles from coal-dust-laden air in the cyclone;
splitting the coal-dust-laden air leaving the cyclone into at least first and second streams;
using the first stream of coal-dust-laden air as primary air to blow the separated coal particles to the kiln for burning;
injecting the second stream of coal-dust-laden air into the clinker cooler beneath the grate thereof to burn the suspended coal dust;
using the heated air obtained from the previous step as secondary air for burning the separated coal particles; and
conveying the combustion gasses from the burned coal particles to the coal mill to dry the coal therein.

4,280,419

PNEUMATIC SYSTEM FOR CONVEYING GRANULAR MATERIAL

Raymond C. Fischer, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Mar. 21, 1977, Ser. No. 779,394
Int. Cl.³ A01C *7/06;* **B65G** *53/40*
U.S. Cl. 111—80 **6 Claims**



1. In combination with a seed planter including a mobile frame, seed planting assemblies movable between a planting position and a transport position, and a source of air under pressure, an improved apparatus for applying granular chemicals onto the ground, comprising:

an enclosed hopper on the frame for holding the granular material to be applied, said hopper having an air inlet opening defined therein;

primary conduit means for directing air under pressure from said source to said air inlet opening in said hopper;

a material conveyor tube mounted within said hopper and having an inlet end disposed in spaced communication with said air inlet opening, whereby air under pressure can flow from said air inlet opening into and through said conveyor tube;

at least one material delivery tube connected to said conveyor tube for directing material therefrom out of the hopper for ground application;

means for adjusting the space between said tube inlet end and said hopper air inlet opening whereby the rate of entry of material into said conveyor tube may be varied;

a discharge assistant disposed in the space between said inlet end and said air inlet opening for directing an auxiliary flow of air into said space to assist the movement of material into said conveyor tube;

auxiliary conduit means for directing air under pressure from said source to said discharge assistant;

means for opening and closing said primary conduit means in response to movement of said seed planting assemblies to said planting position and said transport position respectively; and

means for varying the air flow of said discharge assistant in response to varying the space between said tube inlet end and said air inlet opening.

4,280,420

AUTOMATIC EMBROIDERY SEWING MACHINE

Kouji Nishida, Anjyo; Osamu Miyake, Toyota; Taneichi Kawai, Anjyo, and Shigemitsu Hamajima, Oobu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 10, 1980, Ser. No. 139,040
Claims priority, application Japan, Apr. 23, 1979, 54-50080; Apr. 23, 1979, 54-54447[U]; Apr. 28, 1979, 54-57126[U]
Int. Cl.³ D05C *9/06*
U.S. Cl. 112—103 **6 Claims**

1. In an automatic embroidery sewing machine including an X-axis drive system, a Y-axis drive system, and a support member coupled with both of these drive systems and supporting an embroidery frame; the improvement which comprises

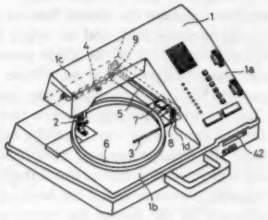
at least one slit opening formed in the upper surface of a bed of the sewing machine to extend in a lateral direction,

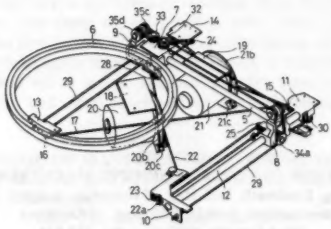
at least one X-axis guide member disposed below the bed and extending in the lateral direction,

a carrier extending through the slit opening and coupled with the X-axis guide member in a slidable manner at a point below the bed,

a Y-axis guide member having its part fixedly connected with the head of the carrier which is exposed above the bed,

and an embroidery frame support member coupled with the Y-axis guide member in a slidable manner,





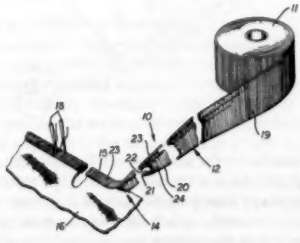
each of the X- and Y-axis drive system including a motor, a plurality of rollers and a wire, the wire of the X-axis drive system being coupled with the carrier, the wire of the Y-axis drive system being coupled with the support member through the carrier.

4,280,421

OPEN EDGE FOLDER

Elvin C. Price, 696 Camp Perrin Rd., Lawrenceville, Ga. 30245

Filed Sep. 14, 1979, Ser. No. 75,804
Int. Cl.³ D05B *35/06*
U.S. Cl. 112—147 **4 Claims**



1. A folder for guiding a web of binding material from a flat configuration into a folded configuration as the web moves through the folder from its inlet end to its outlet end toward a sewing machine or the like comprising an elongated guide plate assembly normally extending in a horizontal attitude and including a guide plate and a cover plate in juxtaposed overlying vertical attitude closed together along their bottom edges and open at their inlet ends and their outlet ends and continu-

ously open along their top edges from the inlet ends to the outlet ends and defining a passage therebetween from the inlet end to the outlet end for a web of material, said guide plate and said cover plate at their inlet ends being substantially flat and oriented in a substantially upright attitude and forming a substantially flat passageway therebetween and merging toward the other end thereof into a folded configuration to progressively form the passageway into a folded shape with a lower fold having one edge adjacent the closed bottom edge of the guide plates, an intermediate fold, and an upper fold having one edge at the open top edges of the guide plate and cover plate, said guide plate terminating at an obtuse angle with respect to the passage between said guide plate and said cover plate and forming an outlet opening between the lower fold and the upper fold of the passageway, whereby binding material moves through the passageway and merges into a folded configuration and is everted as it moves about the obtuse angle and through the outlet opening, and if the binding material is wider than the height of the folder the upper edge of the binding material projects through the open top edge of said guide plate and cover plate.

4,280,422

GUIDE DEVICE FOR SEWING MACHINES

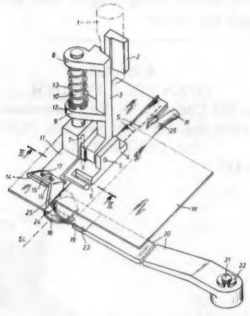
Arno Jung, Fischbach, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,941

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940552

Int. Cl.³ D05B *35/00*

U.S. Cl. 112—147 **10 Claims**



1. A guide device for a sewing machine, having a needle for sewing a stitch line in a sewing direction and a presser bar, for sewing together fabric plies of unequal thickness, comprising, a main sole part, with a stitch hole for the passage of the needle, connected to the presser bar, an auxiliary sole part connected to the presser bar having a first fold plate positioned upstream of the stitch hole in the sewing direction, the first fold plate having a guide edge extending laterally beyond the stitch line on one side thereof, and a second fold plate connected to the sewing machine and spaced at least one fabric thickness above the first fold plate, the second fold plate having a guide edge extending laterally beyond the stitch line on an opposite side thereof; the first and second fold plates forming a guide channel therebetween for forming an S-shape fold and for guiding the S-shape fold toward the needle.

4,280,423

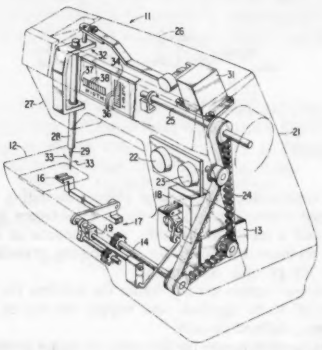
DISPLAY ARRANGEMENT FOR GIVING A VISIBLE PATTERN CORRESPONDING TO ONE OR MORE STITCH PARAMETERS IN A SEWING MACHINE

Michael Goncharko, Union City, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 18, 1980, Ser. No. 179,384

Int. Cl.³ D05B *3/02, 79/00*

U.S. Cl. 112—158 E **9 Claims**



1. In a sewing machine having stitch forming instrumentalities positionally controlled over a predetermined range between stitches to produce a pattern of feed and bight controlled stitches, means for storing pattern stitch information, means operating in timed relation with said sewing machine for recovering selected pattern stitch information from said storing means, separate actuating means responsive to said pattern stitch information for influencing the feed and bight motions respectively to produce a pattern of stitches corresponding to the selected pattern stitch information, controllable alteration means effective to alter the operation of at least one of said feed and bight actuating means to an amount of motion proportional to that dictated by said pattern stitch information, and a control member settable by an operator for controlling said alteration means, the improvement comprising:

a display device including a plurality of light emitting elements positioned in a regular array;

means coupled to said control member for providing a display signal related to the amount of alteration effected by said alteration means; and

decoder means responsive to said display signal for controlling the energization of said plurality of light emitting elements to produce a visible non-numerical light pattern in said display device that is positionally related to the setting of said control member.

4,280,424

HOUSEHOLD TYPE SEWING MACHINE HAVING MICROPROCESSOR CONTROL

Gianfranco Carbonato, Turin, and Nereo Bianchi, Pavia, both of Italy, assignors to Necchi S.p.A., Pavia, Italy

Filed Dec. 26, 1978, Ser. No. 973,386

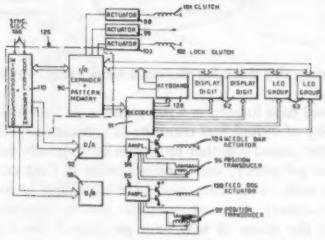
Claims priority, application Italy, Feb. 21, 1978, 42904 A/78

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **39 Claims**

1. In a household type sewing machine having a bed, a standard rising from said bed, a horizontal arm overhanging said bed, said arm ending with a head, a needle bar means disposed in said head for enabling transverse oscillation thereof relative to the direction of fabric feed in said sewing machine, feed means for adjusting the length and direction of said fabric feed, actuator means for adjusting the transverse position of said needle bar means and the positional displacement of said feed means in response to control signals provided thereto and

first static memory means for retrievably storing a first plurality of different predetermined stitch patterns each having associated retrievably stored bight and feed data corresponding to predetermined positional coordinates of said needle bar and feed means for defining associated stitch position coordinates for the stitches comprising said stitch patterns; the improvement comprising microcomputer integrated circuit means operatively connected to said static memory means and to said actuator means for selectively processing said stored stitch pattern data from said static memory means and providing output control signals to said actuator means based on said selectively processed stitch pattern data for controllably adjusting at least the transverse position of said needle bar means, said microcomputer processing means comprising means capable of selectively controllably functionally operating on said stored stitch pattern data in response to input control signals for controllably redefining said stored stitch pattern data for selectively creating output control signals for said actuator means different from the output control signals corresponding to any one of said stored stitch patterns whereby at least the transverse position of said needle bar means may be selectively



varied to redefine a stitch pattern arrangement different from any one of said stored stitch patterns; and keyboard means operatively connected to said microcomputer means for providing said input control signals to said microcomputer processing means for initiating the selection of at least one stored stitch pattern and the functional operation to be performed on said associated selected stored stitch pattern data for controllably adjusting at least the transverse position of said needle bar means for selectively providing a final stitch pattern arrangement from said plurality of stored stitch patterns, said keyboard means comprising a first common key selector having a plurality of modes for initiating selection of at least any one of a plurality of said stored stitch patterns in a first mode and for varying the positional coordinate data associated with said one selected stored stitch pattern in a second mode for providing said input control signals for enabling said selecting and redefining of said stored stitch pattern for providing said different stitch pattern arrangement whereby said sewing machine is capable of providing stitch pattern arrangements corresponding to said stored stitch patterns per se as well as to selectably creatable variations thereof.

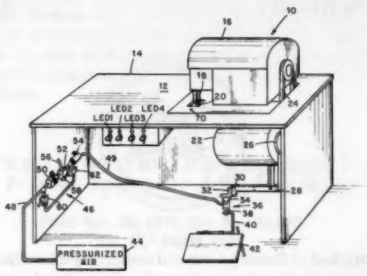
4,280,425

METHOD AND APPARATUS FOR ELECTRO-PNEUMATIC CONTROL OF A STITCHING MACHINE

Gene F. Croyle, Knoxville, Tenn., assignor to PCE Corporation, Knoxville, Tenn.

Filed Jul. 9, 1979, Ser. No. 56,008
Int. Cl.³ D05B *69/00, 19/00*
U.S. Cl. 112—272 **6 Claims**

1. A control system for a stitching machine having means associated therewith for activating and deactivating the stitching mechanism thereof and comprising piston-cylinder means operatively associated with said means for activating and deactivating said stitching mechanism, a source of pressurized fluid, conduit means connecting said source of pressurized fluid to said piston-cylinder means, an electrically operated valve means interposed in said conduit means at a location between said source and said piston-cylinder means, electrical circuitry means suitable to provide an electrical signal to said valve means to selectively control the flow of pressurized fluid to said piston-cylinder means, said circuitry including detector means disposed in the path of a workpiece entering said stitch-



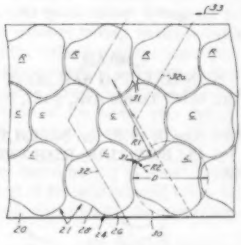
ing mechanism and providing an electrical signal that is representative, total timer means, overrun timer means operable within the time envelope of said total timer means, and gating means providing for the selective activation of said total timer means, said valve means, and said overrun timer means in response to said signal developed by said detector means.

4,280,426

METHOD OF MANUFACTURING WHEEL DISCS

Larry G. Swan, Fairport, N.Y., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Feb. 26, 1979, Ser. No. 15,449
Int. Cl.³ B21D *53/26*
U.S. Cl. 113—116 D **3 Claims**

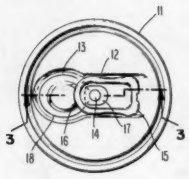


1. A method of forming blanks for three-spoke wheel discs of the type having a periphery defined by three co-cylindrical first portions adapted for attachment to a wheel rim and three second portions alternating with said first portions and adapted to be spaced radially inwardly from the wheel rim, said method comprising the steps of advancing a continuous length of strip stock stepwise in the direction of its length and simultaneously punching at each incremental step three disc blanks having centers lying in a V-shaped pattern pointing lengthwise of said strip stock, each of said disc blanks having an outline defined by an alternating series of three concave edge portions and three convex edge portions with said convex edge portions lying substantially in a circle centered on the associated disc blank and said concave edge portions extending inwardly from said circle, each said concave edge portion having a radius of curvature centered on a line extending between the centers of adjacent blanks, and with convex edge portions of each disc blank outline being nested within concave edge portions of each adjacent disc blank outline both in the same V-shaped pattern and in the immediately preceding and subsequent V-shaped patterns such that wastage of stock material defined by interstices between disc blanks is minimized.

4,280,427
EASY OPEN CAN END

Vinson S. Potts, Cherry Hill, N.J., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Division of Ser. No. 7,186, Jan. 29, 1979, Pat. No. 4,184,607.
This application Aug. 17, 1979, Ser. No. 67,315
Int. Cl.[3] B21D *51/44*
U.S. Cl. 113—121 C 8 Claims



1. Method of forming a can end comprising an end plate and a tab riveted to said end plate wherein said end plate is of aluminum and said tab is stamped from a substantially planar steel blank coated with a metal chosen to be preferentially corroded with respect to the steel, wherein the improvement comprises protecting the edges of the stamped tab by at least partially coating them with a layer of said preferentially corrodible metal, said layer being formed on said edges during said stamping

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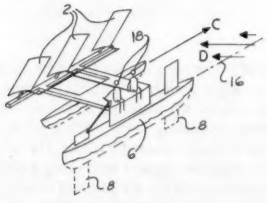
4,280,428
NON-HEELING SAILBOAT

John Werner, Jr., 11455 Tampa Ave., #167, Northridge, Calif. 91326

Filed Aug. 7, 1978, Ser. No. 931,368
Int. Cl.[3] B63B *35/00*; B63H *9/00*
U.S. Cl. 114—39 7 Claims

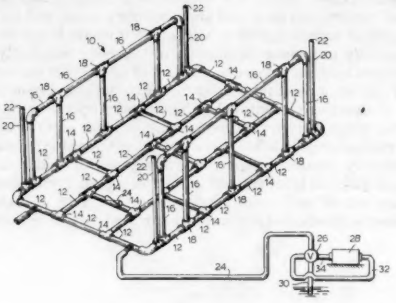


1. A non-heeling sailing vessel comprising:
- a payload bearing first displacement hull having a pair of longitudinally spaced control surfaces rigidly mounted thereto in fixed alignment and extending downwardly therefrom into the water;
- a rigid support structure rigidly fixed to said hull and extending laterally thereof; and
- at least one upstanding sail rigidly mounted to said support structure, said sail being spaced laterally of and inclined toward said control surfaces for generation of a resultant force directed away from said control surfaces and upwardly in response to the wind and,
- a second displacement hull mounted to said support structure intermediate said first displacement hull and said sail.

4,280,429
FLOATING BOAT STORAGE DRY DOCK

Edward R. Wells, 755 Hummingbird Way, No. 2, North Palm Beach, Fla. 33408

Filed Feb. 22, 1979, Ser. No. 14,209
Int. Cl.[3] B63C *1/02*
U.S. Cl. 114—45 2 Claims



1. A floating dry dock for storing a small vessel out of water comprising:
- a base, said base formed in a flat plane, said base including a plurality of cylindrical conduits of substantially the same diameter joined together to form a substantially rectangular base periphery, said conduits being in fluid communication with each other, said base including at least two intermediately disposed conduits joining opposite sides and in the plane of said base peripheral conduits, said intermediate conduits being in fluid communication with said peripheral conduits;
- a boat hull supporting means connected to at least one of said intermediate conduits for engaging a boat hull and supporting a boat in an upright position on said base;
- a first vertical array of conduits connected at one end to one side of said base forming a first side railing, said first vertical conduit array being sealed and having air for buoyancy;
- a second vertical array of conduits, each connected at one end to the opposite side of said base across from said first railing, the second vertical conduit array forming a second side railing, said first and second vertical conduit arrays being substantially parallel;
- means in fluid communication with said base for filling or emptying said base with water; and
- a venting means in fluid communication with said base for allowing venting of said base for the filling emptying of water therefrom.

4,280,430
LINKED-SPAR MOTION-COMPENSATED LIFTING SYSTEM

Jeffrey V. Wilson, and William D. Briggs, both of Camarillo, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

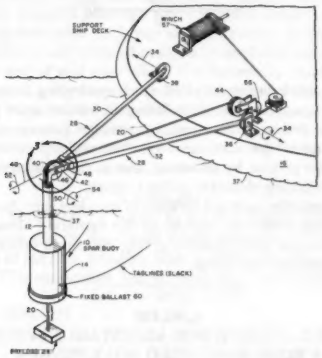
Filed Jan. 26, 1979, Ser. No. 6,825
Int. Cl.[3] B63C *7/00*
U.S. Cl. 114—51 17 Claims

1. A lifting system for operating a lifting cable over the side of a floating platform in which the pitch and roll of the platform and the motion of the water's surface are decoupled from the lifting cable, said lifting system comprising:
- a spar buoy having an upper section with a relatively small cross-sectional area and a base section of a relatively large cross-sectional area, said spar buoy having longitudinal channel for permitting passage of the lifting cable through the spar buoy;

rigid frame means having an outboard and and an inboard end, the inboard end of said frame being hinged on a first axis fixed relative to the deck of the platform to allow the frame to rotate relative to the platform;

yoke means having a first end rotatably coupled to the outboard end of said frame means to allow said yoke means to rotate about a second axis normal to the first axis, said yoke means having a second end pivotably coupled to the top of said upper section to allow said spar buoy to pivot about an axis normal to the second axis and parallel to the first axis;

first sheave means mounted on said yoke means, said first sheave means being free to rotate on its axle and positioned above said spar buoy so that a lifting cable passing over said first sheave will fall through said longitudinal channel;



second sheave means mounted on said platform, said second sheave means being free to rotate on its axle and having the same diameter as said first sheave means, said second sheave means disposed in substantial alignment with said first sheave means for the passage of the lifting cable therebetween and having its center of rotation on said first axis so that the distance between the centers of rotation of said first sheave means and said second sheave means remain fixed as said frame means rotates about the first axis;

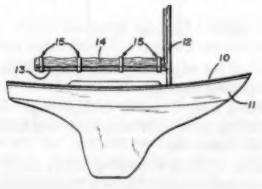
means disposed for letting out and taking in the lifting cable, the lifting cable extending from said means for letting out or taking in over said second and first sheave means and through said longitudinal channel for connection to a payload.

4,280,431

DEVICE FOR SUPPORTING AND STORING THE MAINSAIL OF A SAILBOAT ON THE BOOM THEREOF

Morris B. Sofen, 2602 Carlyle, Kalamazoo, Mich. 49008

Filed Mar. 22, 1979, Ser. No. 22,699
Int. Cl.[3] B63H 9/04
U.S. Cl. 114—105 **6 Claims**



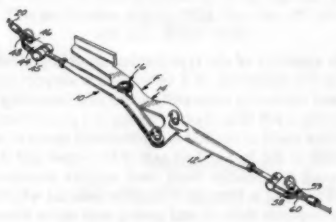
1. A device for supporting and storing the mainsail in folded condition on the boom of a sailboat, said device comprising a body portion having integral clamping means for affixing said device to said boom, said clamping means comprising an integral pair of converging jaws spaced-apart a distance smaller than the thickness of said boom and arranged to be spread apart when pressed onto said boom and to retract sufficiently around said boom when in position to securely affix said device to said boom, a pair of arms integral with and extending from said body portion, said arms being flexible upwardly and adapted to be wrapped around said folded sail, and fastening means at the ends of said arms for fastening the ends of said arms together and around said folded sail and securing said sail to said boom.

4,280,432

QUICK-RELEASE FITTING FOR A SAILBOAT STAY

Thomas F. Dessel, 2015 Studebaker Rd., Long Beach, Calif. 90815

Filed Apr. 30, 1979, Ser. No. 34,687
Int. Cl.[3] B63H 9/04
U.S. Cl. 114—109 **6 Claims**



1. A quick-release fitting for tensioning and untensioning a sailboat stay or the like, that extends between the hull and a mast of the boat, said quick-release fitting comprising:

an upper barrel member having its upper end affixed to the lower end of the sailboat stay, the upper part of the upper barrel normally extending vertically and the lower part thereof extending downwardly and forwardly, and with the rear portion of the lower part having bifurcations formed with a pair of transversely aligned release pin-receiving bores;

a straight lower barrel having its lower end anchored relative to the hull of the sailboat, said lower barrel normally being vertically aligned with the upper part of said upper barrel;

a release lever having a forwardly off-set lower portion, the rear end of which merges into a vertically extending portion, the upper of the vertically extending portion merging into an upwardly and rearwardly extending portion with the lower front part of the latter being formed with a release pin-receiving bore that is normally aligned with the release pin-receiving bores of the upper barrel;

a first pivot pin connecting the front end of the off-set portion of said release lever and the lower end of the upper barrel;

a second pivot pin connecting the rear end of the release lever off-set portion and the upper end of the lower barrel; and

a readily disengagable quick-release pin normally extended through the aligned release pin-receiving bores to retain the parts of the fitting in their normal position wherein said stay is maintained tensioned, with removal of the quick-release pin from said aligned bores permitting the release lever to be pivoted to a rearwardly extending position wherein the off-set portion of said release lever is longitudinally aligned with the upper and lower barrels to thereby increase the distance between the upper and lower ends of the barrels and untension the sailboat stay.

4,280,433

UNDERWATER APPENDAGES FOR VESSELS

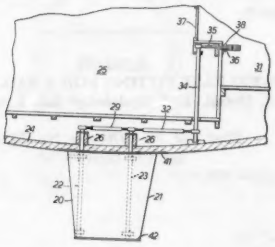
Cecil F. Haddock, Mt. Maurice, Clyde Park, Burua, via Gladstone, Queensland, Australia 4860

Continuation-in-part of Ser. No. 778,008, Mar. 16, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,650

Claims priority, application Australia, Mar. 19, 1976, PC5270; Jun. 7, 1976, PC6193; Oct. 13, 1978, PD6367 3

Int. Cl.[3] **B63B** *3/38*

U.S. Cl. 114—140 **6 Claims**



1. A fin assembly of the type having mounting means connectible to the underside of a vessel and a support structure fixed to and extending outwardly from said mounting means for supporting a foil shaped outer casing in a position such that the incidence plane of the foil in symmetrical shape is substantially parallel to the fore and aft axis of the vessel and the sides of the casing are spaced from said support structure, and wherein the casing is formed of flexible material whereby the respective opposite sides of said casing may move towards or away from said support structure to alter shape to an asymmetrical foil, characterised in that said casing is supported between normally freely pivotable fore and aft pivot assemblies connected pivotably about outwardly extending pivot axles disposed substantially parallel to said incidence plane and adjacent the respective leading and trailing edges of said support structure and wherein said aft pivot assembly is pivoted adjacent its leading edge to permit its trailing edge to be displaced laterally either side of its normally symmetrical position, whereby the incidence plane of the asymmetrical foil may be disposed at a positive angle of attack with respect to the said fore and aft axis of the vessel thus increasing the lift/drag ratio of said asymmetrically disposed casing, and torque transferring means comprising a first pivot lever operatively fixed to said fore pivot assembly, an oppositely arranged second pivot lever fixed to said aft pivot assembly and a transfer linkage interconnecting said levers such as to cause the fore and aft pivot assemblies to pivot oppositely to one another, whereby said casing articulates automatically to a respective asymmetrical attitude due to water pressure against a respective side of said casing, the respective sides of the trailing portions of said fore and aft pivot assemblies abutting said support structure when said casing is disposed in a respective said asymmetrical attitude.

4,280,434

COVER PLATE CONSTRUCTION FOR BOAT DECKS

Frank S. Beckerer, Jr., 40 Dock Rd., Milford, Conn. 06460

Continuation-in-part of Ser. No. 909,396, May 25, 1978, Pat. No. 4,246,859. This application Sep. 6, 1979, Ser. No. 72,884

Int. Cl.[3] **B63B** *19/00*

U.S. Cl. 114—174 **12 Claims**

1. A threaded access cover plate construction for the deck of a boat, comprising in combination:

(a) a deck fitting,

(b) a screw closure receivable in the deck fitting,

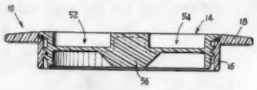
(c) said fitting and screw closure having cooperable, mating buttress-type threads adapted to engage one another when the closure is screwed into the fitting,

(d) means defining a rim on the fitting,

(e) means defining a centering shoulder on said closure, cooperable with said rim,

(f) said cooperable buttress-type threads being dimensioned to provide excessive slop and looseness of enabling lateral shifting of the closure with respect to the fitting, whereby the centering shoulder of the closure can precisely seat into the rim of the fitting when the closure is screwed into the latter, and

(g) mounting means on the fitting, engageable with the boat deck, for securing the fitting thereto in sealing relation therewith,



(h) said rim being constituted as an upstanding annular skirt of deformable material, defining with other outer portions of the fitting, a substantially annular groove such that portions of the skirt can be shifted radially outward and into the groove by an extent, due to their engagement by the centering shoulder of the closure,

(i) said radially outward shifting of the skirt into the groove enabling improved seating of the centering shoulder on the annular skirt, thereby giving rise to an effective seal between the two parts.

4,280,435

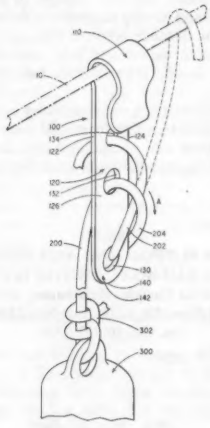
ONE PIECE ANCHOR FOR ADJUSTABLY TETHERING A ROPE SUSPENDED BOAT FENDER

Donald W. Loomis, 1118 Sanger St., Philadelphia, Pa. 19124

Filed Aug. 11, 1978, Ser. No. 932,790

Int. Cl.[3] **B63B** *59/02;* **F16G** *11/00*

U.S. Cl. 114—219 **2 Claims**



1. A method for adjustably tethering a rope suspended boat fender comprising the steps of:

A. providing a rope anchor comprising:

i. anchoring means for attaching said anchor to a portion of said boat; and

ii. a strap portion extending away from said anchoring means and terminating in a rounded free end having at least first and second spaced apart eyelet means defined therein for receiving rope threaded therethrough, said strap portion having longitudinal edges extending from

said free end and said second eyelet means being disposed adjacent to and being surrounded at least in part by said rounded end,

B. threading the free end of a rope attached to said boat fender first into said first of said eyelet means from a first side of said strap portion;

C. threading said rope around a first of said longitudinal edges of said strap portion and into said second eyelet means from said first side of said strap portion, whereby said rope is in a retardedly moveable position for permitting adjustment of the boat fender with respect to the rope anchor; and

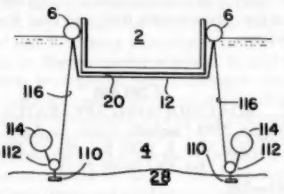
D. selectively sliding the portion of said rope disposed between said eyelet means from engagement with said first of said longitudinal edges, around said rounded end into engagement with a second of said longitudinal edges to selectively retain said rope with respect to said rope anchor, whereby said rope is in a retained position, said rope being moveable back into said retardedly moveable position from said retained position by applying tension on the free end of said rope which is substantially parallel to and directed away from the end of said strap portion, whereby said rope may be caused to slide out of engagement with said second longitudinal edge, around said rounded end, and into engagement with said first longitudinal edge.

4,280,436

BOAT HULL ANTI-FOULING SHROUD

Robert Jackson, 89 Woodward Island, Clearwater, Fla. 33515

Division of Ser. No. 883,414, Mar. 6, 1978, Pat. No. 4,215,644.
This application Jun. 6, 1980, Ser. No. 157,229
Int. Cl.³ B63B *59/00*
U.S. Cl. 114—222 **1 Claim**



1. A selectively floatable protective shroud for a boat hull floating in a body of water, comprising:

an inflatable, elongated toroidal bladder with an inner opening larger than the circumference of the hull of said boat at its waterline, having an inflation nozzle, located in said body of water;

a continuous, flexible, water impervious shroud having a circumferential edge mounted about the circumference of said torodial bladder, for protecting said hull when deployed about said boat;

a gas pump connected to said inflation nozzle of said bladder, for controllably inflating said bladder to selectively float said shroud from a submerged position beneath said boat to a deployed position enveloping the hull of said boat;

a water drain nozzle mounted on said flexible shroud for evacuating sea water from the region between said flexible shroud and said boat hull;

a water pump connected to said water nozzle for controllably pumping out said sea water from said region;

a guide member mounted to the sea bed floor and connected to said bladder, for guiding said shroud from said submerged position beneath said boat into said deployed position enveloping the hull of said boat;

said guide member further comprising:

a pair of anchors mounted to the sea bed floor on opposite sides of said boat;

a pair of pulleys, respectively mounted to each of said anchors;

a pair of buoys respectively connected to one of a pair of guy wires which respectively pass through one of said pair of pulleys, each said guy wire being connected to said bladder;

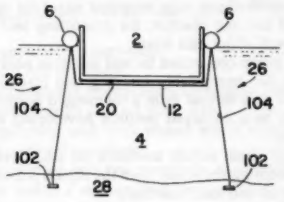
said bladder having its motion constrained by said guy wires, pulleys, anchors and buoys to remain in substantially the vertical direction in transferring said shroud between said floating and said submerged positions.

4,280,437

BOAT HULL ANTI-FOULING SHROUD

Robert Jackson, 89 Woodward Island, Clearwater, Fla. 33515

Division of Ser. No. 883,414, Mar. 6, 1978, Pat. No. 4,215,644.
This application Jun. 6, 1980, Ser. No. 157,231
Int. Cl.³ B63B *59/00*
U.S. Cl. 114—222 **1 Claim**



1. A selectively floatable protective shroud for a boat hull floating in a body of water, comprising:

an inflatable, elongated toroidal bladder with an inner opening larger than the circumference of the hull of said boat at its waterline, having an inflation nozzle, located in said body of water;

a continuous, flexible, water impervious shroud having a circumferential edge mounted about the circumference of said toroidal bladder, for protecting said hull when deployed about said boat;

a gas pump connected to said inflation nozzle of said bladder, for controllably inflating said bladder to selectively float said shroud from a submerged position beneath said boat to a deployed position enveloping the hull of said boat;

a water drain nozzle mounted on said flexible shroud for evacuating sea water from the region between said flexible shroud and said boat hull;

a water pump connected to said water nozzle for controllably pumping out said sea water from said region;

a guide member mounted to the sea bed floor and connected to said bladder, for guiding said shroud from said submerged position beneath said boat into said deployed position enveloping the hull of said boat;

said guide member further comprising:

a pair of anchors mounted to the sea bed floor on opposite sides of said boat;

a pair of elastic members, respectively mounted to each of said anchors and connected to said bladder;

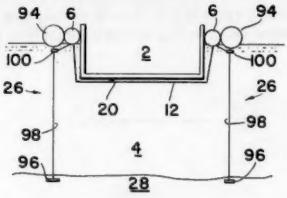
said bladder having its motion constrained by said anchors and elastic members to remain in substantially the vertical direction in transferring said shroud between said floating and submerged positions.

4,280,438

BOAT HULL ANTI-FOULING SHROUD

Robert Jackson, 89 Woodward Island, Clearwater, Fla. 33515

Division of Ser. No. 883,414, Mar. 6, 1978, Pat. No. 4,215,644.
This application Jun. 6, 1980, Ser. No. 157,232
Int. Cl.[3] B63B *59/00*
U.S. Cl. 114—222 **1 Claim**



1. A selectively floatable protective shroud for a boat hull floating in a body of water, comprising:

an inflatable, elongated toroidal bladder with an inner opening larger than the circumference of the hull of said boat at its waterline, having an inflation nozzle, located in said body of water;

a continuous, flexible, water impervious shroud having a circumferential edge mounted about the circumference of said toroidal bladder, for protecting said hull when deployed about said boat;

a gas pump connected to said inflation nozzle of said bladder, for controllably inflating said bladder to selectively float said shroud from a submerged position beneath said boat to a deployed position enveloping the hull of said boat;

a water drain nozzle mounted on said flexible shroud for evacuating sea water from the region between said flexible shroud and said boat hull;

a water pump connected to said water nozzle for controllably pumping out said sea water from said region;

a guide member mounted to the sea bed floor and connected to said bladder, for guiding said shroud from said submerged position beneath said boat into said deployed position enveloping the hull of said boat;

said guide member further comprising:

a pair of buoys anchored to the sea bed floor by guy wires on opposite sides of the boat;

a pair of ring members, respectively mounted in sliding engagement with each of said guy wires and connected to said bladder;

said bladder having its motion constrained by said guy wires and ring members to remain in substantially the vertical direction in transferring said shroud between said floating and submerged positions.

4,280,439

BOAT HULL ANTI-FOULING SHROUD

Robert Jackson, 89 Woodward Island, Clearwater, Fla. 33515

Division of Ser. No. 883,414, Mar. 6, 1978, Pat. No. 4,215,644.
This application Jun. 6, 1980, Ser. No. 157,233
Int. Cl.[3] B63B *59/00*
U.S. Cl. 114—222 **2 Claims**

1. A selectively floatable protective shroud for a boat hull floating in a body of water, comprising:

an inflatable, elongated toroidal bladder with an inner opening larger than the circumference of the hull of said boat at its waterline, having an inflation nozzle, located in said body of water;

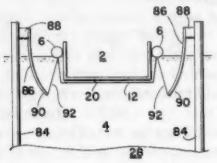
a continuous, flexible, water impervious shroud having a circumferential edge mounted about the circumference of said toroidal bladder, for protecting said hull when deployed about said boat;

a gas pump connected to said inflation nozzle of said bladder, for controllably inflating said bladder to selectively float said shroud from a submerged position beneath said boat to a deployed position enveloping the hull of said boat;

a water drain nozzle mounted on said flexible shroud for evacuating sea water from the region between said flexible shroud and said boat hull;

a water pump connected to said water nozzle for controllably pumping out said sea water from said region;

a guide member mounted to the sea bed floor and connected to said bladder, for guiding said shroud from said submerged position beneath said boat into said deployed position enveloping the hull of said boat;



said guide member further comprising:

a pair of pilings mounted to the sea bed floor on opposite sides of said boat;

a pair of flexible rods, each respectively vertically mounted at its upper end to one of said pilings, with its respective lower end connected to said bladder;

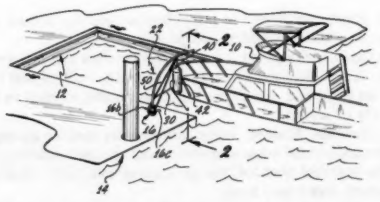
said bladder exerting a buoyant force on said lower end of each said rod when undergoing said inflation, bending said rods toward each other and upwardly toward the surface of the water, said bending motion of said rods guiding said shroud into juxtaposition with said boat floating between said pilings.

4,280,440

BOAT MOORING APPARATUS

James I. Barton, 7505 Caminito Avola, La Jolla, Calif. 92037

Filed Mar. 5, 1979, Ser. No. 17,435
Int. Cl.[3] B63B *21/00*
U.S. Cl. 114—230 **14 Claims**



1. In combination for use at a dock to provide for a mooring of a boat to the dock during the movement of the boat into a slip in the dock,

a resilient member normally extending upwardly when in an unconstrained configuration,

means for providing for a pivotal movement of the resilient member, such providing means including a member extending from the dock into the slip for engagement by the movement of the boat into the dock to provide the pivotal movement of the providing means,

means including bumper means and a first cord attached at one end to the dock and at the other end to the bumper means,

means provided on the resilient member at an intermediate position along the length of the resilient member for detachably retaining the bumper member and for providing

a bent configuration of the resilient member with the bumper member attached to the resilient member,

the first cord having properties of being adaptable in shape to provide for the disposition of the bumper means over the water between the hull of the boat and the dock when the bumper means is detached from the resilient member,

a second cord having properties of being adaptable in shape and attached to the dock at a first end and being attachable to the boat at the second end,

means provided on the resilient member for detachably retaining the cord at the second end of the cord, and

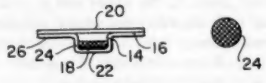
the resilient member returning to its normally upwardly extending configuration when the first and second cords are detached.

4,280,441

TEMPERATURE INDICATOR

Gerald W. McNeely, Arden, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jul. 6, 1979, Ser. No. 55,241
Int. Cl.³ G01K *11/06, 11/18, 13/00*
U.S. Cl. 116—219 **12 Claims**



1. A reversible steam trap temperature indicator, comprising:

(a) a substrate having an embossed well therein;

(b) a substantially transparent cover over said well, the bottom of said well being a detectable color;

(c) a porous or fibrous carrier received in said well, said carrier voids impregnated with a chemical which is solid below a predetermined temperature and liquid above said predetermined temperature, said carrier adapted to refract light to maintain an opaque cover over the painted bottom of said indicator at least when said chemical is solid;

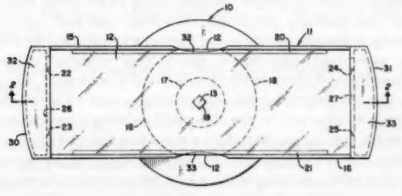
(d) a substantial amount of said chemical remaining in said carrier in both liquid and solid phases, and the color of the bottom of said well being visible when said chemical is in its liquid phase and substantially invisible when it is in its solid phase.

4,280,442

APPARATUS FOR PRODUCING MONOCELLULAR LAYERS OF CELL-CONTAINING BIOLOGICAL FLUID

Leighton C. Johnson, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 19, 1980, Ser. No. 122,121
Int. Cl.³ B05C *11/12*
U.S. Cl. 118—52 **19 Claims**



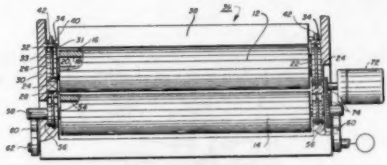
1. Apparatus for generation of a monocellular layer of a cell-containing biological fluid sample applied to a surface of a microscope slide or the like, said apparatus comprising an elongated channel-shaped holder having opposing vertical sidewalls, a horizontal bottom wall and open opposite end portions, a motor having a vertical drive shaft connected to said holder for spinning the latter in a horizontal plane, said holder being provided with shoulder means therein adjacent said side and bottom walls adapted for placement of a slide thereon in an operative position wherein it is in spaced parallel relation to said bottom wall, with the longitudinal edge portions of said slide respectively contiguous to the inner surfaces of said sidewalls.

4,280,443

ROLL FUSER LOADING SYSTEM

Gregory V. Bogoshian, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1979, Ser. No. 100,165
Int. Cl.³ G03G *13/20;* **B05C** *11/00*
U.S. Cl. 118—60 **6 Claims**



1. Roll fuser apparatus comprising:

first and second roll members;

wick means for applying release agent material to one of said roll members through contact therewith;

means for supporting said wick means out of contact with said one of said roll members;

means for supporting said roll members in a spaced apart relationship and in a manner that they are free to move;

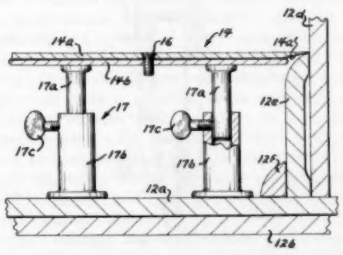
means for effecting pressure engagement of said roll members and simultaneous displacement thereof in one direction whereby said one of said roll members is moved into contact with said wick means and displacement of said roll members in the opposite direction whereby said one of said roll members is moved out of contact with said wick means; and said roll members are disengaged.

4,280,444

PROTECTIVE SHIELD FOR A BASEBOARD OR THE LIKE

Terry L. Jones, 827 E. 19th St., Owensboro, Ky. 42301

Filed Jul. 27, 1979, Ser. No. 61,429
Int. Cl.³ B05C *21/00*
U.S. Cl. 118—504 **2 Claims**



1. A protective paint shield for a baseboard disposed against an upstanding wall adjacent a floor comprising a plate assembly, and vertically adjustable legs disposed on said floor mounting said plate assembly to accommodate various heights

of said baseboard, where said vertically adjustable legs are defined by a first part movable with respect to a second part and tightening means selectively securing said first and said second parts and said plate assembly at a preselected height of said baseboard, and where said plate assembly includes a detachable plate having a flat leading edge portion undercut to define a line of demarkation with the upper edge of said baseboard in an overlying shielding relationship and abutting said upstanding wall.

4,280,445

METHODS OF AND/OR APPARATUS FOR MILKING ANIMALS

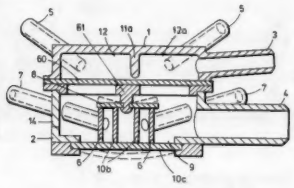
Evan M. Phillips, Hamilton, New Zealand, assignor to AHI Operations Limited, Auckland, New Zealand

Filed Jun. 4, 1979, Ser. No. 45,315

Claims priority, application New Zealand, Jun. 2, 1978, 187464; Jan. 29, 1979, 189498

Int. Cl.³ A01J *5/04, 5/12*

U.S. Cl. 119—14.02 **17 Claims**



1. A method of milking animals comprising the steps of applying a milking vacuum to the interior of each of at least one set of teat cups, applying a pulsating pressure to the pulsation cavity of each said teat cup, maintaining said milking vacuum and said pulsating pressure separate from each other and controlling said pulsating pressure so that the minimum pulsating pressure is no less than the milking vacuum by causing a pressure sensitive member to be exposed on one surface thereof to said pulsating pressure and on an opposite surface thereof to said milking vacuum and controlling the positional variations of the pressure sensitive member relative to a valve seat engaging the pulsating pressure surface of the pressure sensitive member to control the minimum pulsating pressure to be not less than the pressure of said milking vacuum.

4,280,446

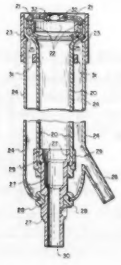
INFLATION FOR TEAT CUP ASSEMBLY

Daniel O. Noorlander, 508 W. 630 South, Orem, Utah 84057

Filed May 7, 1979, Ser. No. 36,562

Int. Cl.³ A01J *5/04*

U.S. Cl. 119—14.49 **14 Claims**



1. An inflation for use in a teat cup assembly for automatic milking machines employing a vacuum milk line and a vacuum pulsator, said inflation comprising:

an elongate, tubular, body-forming member made of a resilient, flexible, elastomeric material having a generally triangular cross-sectional shape, with the upper and lower ends of said body-forming member being adapted, respectively, to receive the teat of a cow and to be attached to the vacuum milk line of an automatic milking machine;

an expansion ring having an outer circumference substantially greater than the cross-sectional circumference of the body-forming member, said expansion ring being positioned at the upper end of said body-forming member, with the upper end portion of said body-forming member being expanded outwardly from the longitudinal axis of said body-forming member and over the outer circumference of said ring, whereby the upper end portion of said body-forming member is held in an enlarged circular configuration around said ring; and

a diaphragm having a central opening therein, said diaphragm being formed from a tubular, mouth-forming member made of a resilient, flexible, elastomeric material, said tubular, mouth-forming member having a generally round cross-sectional shape with a circumference smaller than the cross-sectional circumference of the unexpanded portion of said body-forming member, one end of said tubular, mouth-forming member being expanded to at least about the inner circumference of said expansion ring and being joined to the upper end of said body-forming member, with the other end of said tubular, mouth-forming member being deflected inwardly substantially transverse to the longitudinal axis of said body-forming member to form said diaphragm, and with the open other end of said tubular, mouth-forming member forming said central opening in said diaphragm, said central opening being adjacent to the enlarged upper end of said body-forming member and substantially coaxial with the longitudinal axis of said body-forming member.

4,280,447

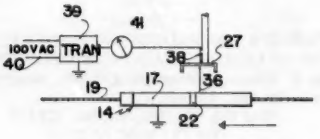
ANIMAL FACILITY EQUIPMENT

Frank R. Laurenz, Eagle Butte, S. Dak., assignor to Agricultural Research & Development Inc., Eagle Butte, S. Dak.

Filed Feb. 22, 1980, Ser. No. 123,839

Int. Cl.³ A01K *1/00;* **B65G** *25/08*

U.S. Cl. 119—28 **20 Claims**



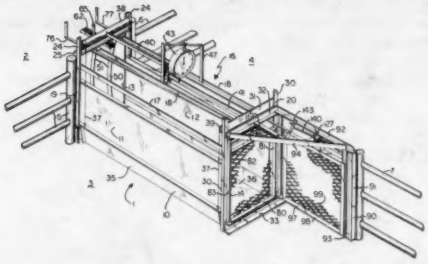
1. In an animal facility having a moving facility such as a manure scraper assembly, moving along an alleyway having at least one partition across the alleyway, said moving facility passing under the partition and having a longitudinally extending, elongated, electrically conducting member extending forwardly and rearwardly thereof; and a source of electrical energy; the improvement comprising means to electrify the moving facility only as the elongated member passes under the partition, said means including a mounting support securable to said partition, current carrying means engaging the elongated member of the moving facility as it passes under the partition, means mounting said current carrying means to said mounting support and electrically insulated therefrom and means operatively connecting said current carrying means to the source of electrical energy.

4,280,448

LIVESTOCK SORTING DEVICE

Jerry L. Ostermann, P.O. Box 188, Sylvan Grove, Kans. 67481

Filed Feb. 22, 1980, Ser. No. 123,751
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—155 **5 Claims**



1. An apparatus for sorting animals comprising:

(a) a chute having sides adapted for enclosing an animal and having an entrance end and an exit end; said exit end being adapted for communicating with first and second animal segregation areas;

(b) weighing means associated with said chute for determining weight of an animal enclosed in said chute;

(c) a first gate being pivotally connected to said chute near one side of said chute exit end; said first gate having a first operative position wherein said first gate is generally parallel to said exit end, a second operative position wherein said first gate is at an acute angle with respect to said exit end, and a third position wherein said first gate is generally perpendicular to said exit end;

(d) a second gate being pivotally connected to said chute at a location spaced outwardly from an opposite side of said chute exit end; said second gate having a first operative position generally perpendicular to said chute exit end and having a second operative position wherein said second gate is generally aligned with said first gate while said first gate is in said second operative position thereof; and

(e) mechanical means for selectively moving said first and second gates through the operative positions thereof;

(f) whereby when said first gate is in said first position thereof, said chute enclosed animal is prevented from egressing from said chute exit end; when said first gate is in said second position thereof and said second gate is in said second position thereof, said chute enclosed animal is free to egress from said chute into said first animal segregation area; and when said first gate is in said third position thereof and said second gate is in said first position thereof, said chute enclosed animal is free to egress from said chute into said second animal segregation area.

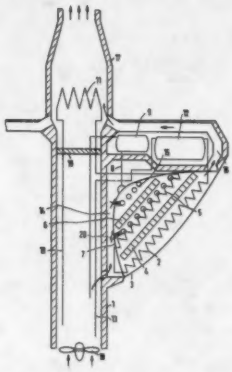
4,280,449

STEAM GENERATOR FOR A SOLAR POWER PLANT

Konrad Künstle, Röttenbach; Kurt Reiter, and Christian Koch, both of Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,754
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835702
Int. Cl.³ B09B *3/00*
U.S. Cl. 122—4 R **2 Claims**

1. Steam generator for a solar power plant, with an evaporator heating surface having a front side exposable to focused sun rays and a rear side adjacent a chamber, and burner means for supplying at least part of the heat required by the steam generator, said burner means comprising a sintered-block slab operating as a reformed-gas generator, a burner plate disposed downstream of said sintered-block slab in flow direction of the gas, said burner plate being disposed immediately adjacent said rear side of said evaporator heating surface, and an air-permeable



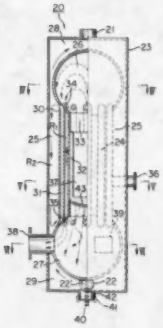
further heating surface for the steam generator disposed between said sintered-block slab and said burner plate.

4,280,450

LIQUID HEATING APPARATUS

Noboru Maruyama, No. 26-14, Shirasagi 2-chome, Nakano-ku, Tokyo, Japan

Filed Oct. 26, 1979, Ser. No. 88,487
Claims priority, application Japan, May 15, 1979, 54-59399
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—17 **5 Claims**



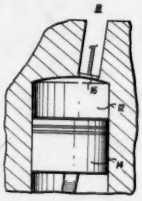
1. A liquid heating apparatus comprising a cylindrical outer shell provided with an outlet and an inlet, in which an inner shell consisting of a cylindrical body whose upper and lower portions are respectively provided with an enlarged flue chamber having a cross-sectional area remarkably larger than that of said cylindrical body is installed within said outer shell by leaving a space between the two shells so as to form a water jacket therebetween, a fire chamber is formed by closing said cylindrical body at above said lower enlarged flue chamber, an insert hole for burner which penetrates said inner and outer shells and opens into said fire chamber is provided, a rising heated gas chamber communicating with said fire chamber as well as upper enlarged flue chamber is formed above the fire chamber, a falling heated gas space is formed by intercommunicating said upper and lower enlarged flue chambers by means of plural smoke pipes penetrating the water jacket formed in between said outer and inner shells, and a flue outlet is provided for said lower enlarged flue chamber.

4,280,451

HIGH COMPRESSION VACUUM CYCLE ENGINE

Edward J. Moore, 930 Wrenwood Rd., Florence, S.C. 29501

Filed Apr. 23, 1980, Ser. No. 143,153
Int. Cl.[3] F01L *1/04, 1/08*
U.S. Cl. 123—90.6 9 Claims



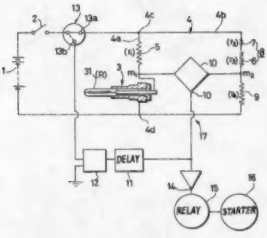
1. A spark ignition four cycle internal combustion engine having intake, compression, expansion and exhaust strokes, using said compression stroke to compress a charge with a compression ratio in the range from 9:1 to 25:1, said engine having an intake valve in communication with a cylinder and a piston reciprocally movable within said cylinder, wherein the compression stroke is always started with the charge under less than atmospheric pressure, said engine using said expansion stroke after combustion of said charge, said combusted charge being under greater than atmospheric pressure at the end of said expansion stroke at substantially full torque, said engine having said exhaust stroke of said combusted charge after said expansion stroke, said combusted charge being under greater than atmospheric pressure upon the start of said exhausting stroke at substantially full torque, wherein having the charge under less than atmospheric pressure is obtained by closing the intake valve before the piston reaches bottom dead center.

4,280,452

ENGINE START ENHANCEMENT DEVICE

Hideo Kawamura, Yamato, and Takahiko Itou, Tokyo, both of Japan, assignors to Isuzu Motors Ltd., Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 74,948
Claims priority, application Japan, Sep. 19, 1978, 53/114879
Int. Cl.[3] F02N *17/00;* F02P *19/02*
U.S. Cl. 123—179 BG 5 Claims



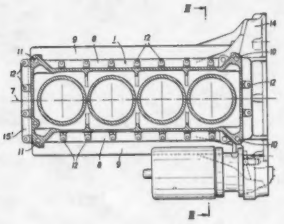
1. In an engine start enhancement device adapted to be connected to a power supply through a key switch, the improvement comprising a first resistor having resistance r_1 and having a positive temperature coefficient and a heat generating element of a glow plug having a resistance R connected in series, a second resistor having a predetermined constant resistance r_2 and a third resistor having a resistance r_3 which varies according to the temperature variation of resistance of said first resistor and having a positive temperature coefficient and a fourth resistor having a predetermined constant resistance r_4 connected in series with end terminals of the series combination connected to end terminal of the series combination of said first resistor and said heat generating element to form a bridge circuit, and a comparator connected to middle points of said bridge circuit, said comparator producing an output signal when $(r_2+r_3)/r_1 \cong r_4/R$, and means for disconnecting the power supply from said bridge circuit is response to said output signal from said comparator.

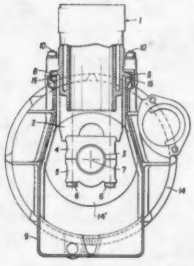
4,280,453

MULTICYLINDER INTERNAL COMBUSTION ENGINE

Hans List, 126, Heinrichstrasse, Graz, Austria; Othmar Skatsche, and Josef Greier, both of Graz, Austria, assignors to Hans List, Graz, Austria

Continuation of Ser. No. 717,895, Aug. 26, 1976, abandoned.
This application Jan. 23, 1979, Ser. No. 5,703
Claims priority, application Austria, Sep. 4, 1975, 6850/75
Int. Cl.[3] F02F *7/00*
U.S. Cl. 123—195 R 8 Claims





1. In a multicylinder internal combustion engine which includes a cylinder block, a crankcase positioned generally below the cylinder block, and a crankshaft extending through the crankcase and rotatable about a central axis; said cylinder block having a generally box-like shape and including integral main bearing means extending downwardly into said crankcase to support the crankshaft; and said crankcase having openings at opposite sides thereof through which the crankshaft extends; the improvements wherein

said cylinder block includes a connection flange which extends outwardly along substantially all the sides of said cylinder block, said connection flange having a continuous surface which faces said crankcase,

said crankcase includes a generally rectangular upper portion means which encompasses the portions of said cylinder block below the connection flange, a counter flange which extends outwardly along substantially all the sides of said upper portion means which is fixedly connected to all of said continuous surface of said connection flange of said cylinder block, and as an integral portion thereof a flywheel housing extending away from one side thereof, and

said crankshaft includes at the end thereof which extends into said flywheel housing a flywheel, the radius of said flywheel being less than the distance between the connection flange of said cylinder block and said central rotational axis of said crankshaft.

4,280,454

ENGINE INSTALLATIONS

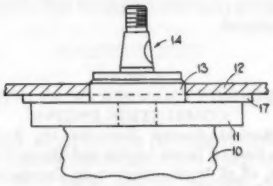
Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 29, 1979, Ser. No. 53,237

Claims priority, application United Kingdom, Jul. 18, 1978, 30196/78

Int. Cl.[3] F02F 7/00

U.S. Cl. 123—195 A 4 Claims



1. An engine installation including an engine casing, an engine ancillary including a shaft driven in use, in timed relationship with the engine by driving means within the engine casing and means mounting the ancillary on the casing, said means comprising a mounting flange on the engine ancillary, said mounting flange having formed therein an arcuate aperture spaced from the axis of rotation of the shaft, a mounting plate for location against the said flange, a circular aperture formed in the mounting plate at a position to register with said arcuate aperture, securing means for securing the mounting flange and the mounting plate to the engine casing, said securing means including a cylindrical element passing through said apertures, and means for fastening said plate to said flange once the ancillary has been correctly positioned on the engine casing whereby the ancillary and the plate can be detached from the casing and reassembled thereto, the aperture in the plate ensuring that the ancillary and plate are reassembled to the casing in the correct position.

4,280,455

INTERNAL COMBUSTION ENGINE

Hiroshi Yamaguchi, Ohmiya; Hiroaki Kaneko, Ageo, and Toshihiro Nagano, Tokyo, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1979, Ser. No. 4,133

Claims priority, application Japan, Jan. 30, 1978, 53/9008; Jan. 30, 1978, 53/9009; Jan. 30, 1978, 53/9010; Jan. 30, 1978, 53/9813[U]

Int. Cl.[3] F01M 1/00

U.S. Cl. 123—196 M 10 Claims

1. An internal combustion engine comprising

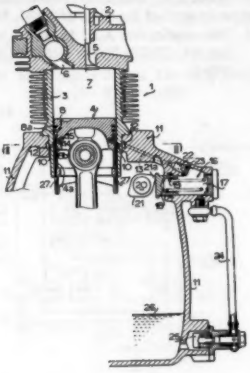
a cylinder comprising a hollow wall member having a periphery defining a chamber having a center,

a piston reciprocatingly disposed in the periphery of said wall member of said cylinder in said chamber operatively between a top dead center and a bottom dead center of the piston and defining space between said piston and said wall member,

piston rings disposed on a periphery of said piston,

said wall member being formed with at least a pair of oil ports, said oil ports communicating symmetrically with said peripheries of said wall member and of said piston and being symmetrically arranged relative to said center of said chamber, said oil ports communicating with said space between said wall member and said piston and being positioned to open onto a portion of said piston below a lowermost of said piston rings when said piston is at the bottom dead center and positioned to open onto a lower end portion of the piston skirt when said piston is at the top dead center,

means for supplying, during the reciprocation of said piston including during the top dead center and the bottom dead center of the piston, a portion of lubricating oil for the internal combustion engine under pressure to and through said oil ports to said space, said means including conduit



means for communicating said oil ports with a portion of said means for supplying a portion of the lubricating oil.

4,280,456

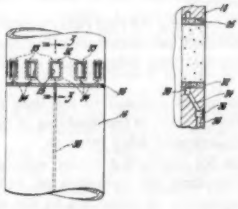
ENGINE WITH INTAKE PORTED CYLINDERS AND POROUS PORT LINERS FOR OIL CONTROL

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1979, Ser. No. 88,299

Int. Cl.[3] F01M 11/08

U.S. Cl. 123—196 R 1 Claim



1. The combination of an engine having oil lubricated cylinders and pistons controlling inlet ports in the cylinders, a crankcase below the cylinders to which used lubricating oil is returned for storage and reuse, and the improvement comprising

porous liners in said cylinder inlet ports to receive lubricating oil delivered to the ports such as by movement of the pistons within their respective cylinders,

collector means in the port walls adjacent the porous liners to receive oil draining therefrom, and

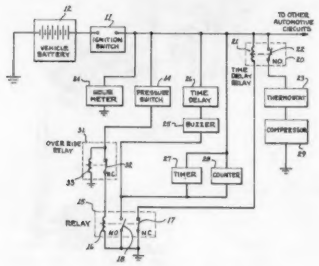
return passage defining means connecting the collector means with the engine crankcase to return to the crankcase oil received in the collector means from the port liners,

whereby the loss of lubricating oil through movement from the inlet ports into the engine combustion chambers and exhaust system is limited.

4,280,457
SYSTEM FOR MONITORING AND IMPROVING MOTOR VEHICLE OPERATING EFFICIENCY

Steven R. Bloxham, P.O. Box 2821, Scottsdale, Ariz. 85252

Continuation-in-part of Ser. No. 889,194, Mar. 23, 1978, abandoned. This application Apr. 13, 1979, Ser. No. 29,638
Int. Cl.³ F02B 77/00; F25B 27/00
U.S. Cl. 123—198 R 7 Claims



1. Apparatus for improving motor vehicle fuel efficiency by reducing the accessory load on the engine during periods of reduced operating efficiency, said apparatus, comprising:

(a) means for monitoring engine operating conditions and providing an output signal indicative of engine operating efficiency below a threshold level;

(b) time delay means responsive to the output signal of said monitoring means, said time delay means having first and second states and first and second pre-determined delay intervals, said time delay means being activated to the second state by the application of said output signal to the time delay means for at least as long as said first delay interval, said second delay interval occurring upon the terminating of said output signal whereby the time delay means remains in the second state for at least as long as the second interval;

(c) means for coupling the time delay means to the accessory being controlled, said accessory being disabled from operation when said time delay means is in the second state; and

(d) override means coupled to the time delay means for limiting the duration of the disabling of the accessory to a third predetermined delay interval.

5. Apparatus for improving motor vehicle operating efficiency by controlling the operation of vehicle accessories wherein said apparatus is connected to the vehicle electrical circuit and responsive to engine manifold pressure, said apparatus comprising:

(a) switch means having first and second states and responsive to changes in engine manifold pressure, said switch means being in the first state when the manifold vacuum pressure is less than a threshold level;

(b) time delay relay means having a first control element coupled to said switch means and the vehicle electrical circuit and a first switch element coupled to the accessory being controlled, said first switch element having a delayed response to the activation and deactivation of said first control element, said first control element being activated when the switch means enters the first state whereby the first switch element responds to disable the accessory;

(c) override delay means responsive to a change in state by the switch means to the first state for overriding the disabling of the accessory by the first switch element after a predetermined interval whereby said accessory resumes operation independently of the state of said switch means.

4,280,458
ANTIKNOCK COMPONENT

Thomas E. Kiovsky, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

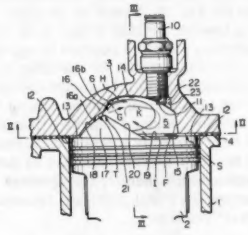
Filed Sep. 2, 1980, Ser. No. 183,539
Int. Cl.³ F02B 47/00
U.S. Cl. 123—198 A 15 Claims

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing an octane-improving amount of an antiknock material selected from the group consisting of ortho-azidophenol and alkyl derivatives of ortho-azidophenol.

4,280,459
COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Kiyoshi Nakanishi, Susono; Kazuhiko Ito, Toyota; Takeshi Okumura, Susono; Isamu Iezuka, and Masao Yasukawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 15, 1979, Ser. No. 39,181
Claims priority, application Japan, Jul. 20, 1978, 53/87661
Int. Cl.³ F02B 23/08
U.S. Cl. 123—307 9 Claims



1. An internal combustion engine comprising: a cylinder block having a cylinder bore therein; a cylinder head mounted on said cylinder block and having an inner wall; a first raised portion having on its lower end a flat bottom face and being formed on the periphery of the inner wall of said cylinder head so as to project downwards; a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face so as to create a first squish area therebetween at the end of the compression stroke for spouting out a first squish flow along the top face of said piston, the inner wall of said cylinder head and the top face of said piston defining a combustion chamber therebetween; an intake valve movably mounted on said cylinder head for leading a combustible mixture into said combustion chamber; an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere; a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said combustion chamber, said rear face being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said combustion chamber in the direction opposite to the spouting direction of said first squish flow, said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said combustion chamber, and; a spark plug having a spark gap located in said combustion chamber, wherein the improvement comprises: a third raised portion formed on the inner wall of said cylinder head above said second raised portion and having a bottom wall which cooperates with said rear face of said second raised portion for creating said second squish area therebetween, said third raised

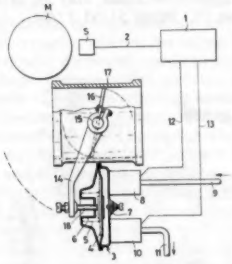
portion having a steeply inclined side wall which extends upwards from a ridge of said second raised portion, and; a depression formed in a central portion of the top face of said piston and having a substantially vertically extending peripheral wall which extends downwards from an inner end of the flat bottom face of said first raised portion, said peripheral wall of said depression being aligned with said inner wall of said cylinder block along substantially the entire length of said inner wall opposite to said third raised portion, said peripheral wall of said depression being sinuous.

4,280,460

AUTOMATIC REGULATOR OF THE IDLING IN AN INTERNAL-COMBUSTION ENGINE

Aldo Bassi, Milan; Dario Radaelli, Legnano, and Edoardo Rogora, Milan, all of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Dec. 11, 1978, Ser. No. 968,421
Claims priority, application Italy, Dec. 22, 1977, 31150 A/77
Int. Cl.³ F02D *11/08*
U.S. Cl. 123—382 **2 Claims**



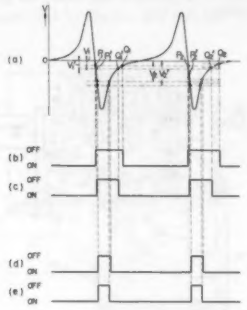
1. An automatic regulator of the idling rpm of an internal combustion engine equipped with at least one throttling butterfly for throttling the feeding of a fluid stream for the engine, said butterfly being actuated as a function of the position of the accelerator pedal, said regulator being characterized in that it comprises a volume provided with a movable wall, first and second electrically controlled normally closed valve means for causing the delivery of a pressurized fluid into said volume and, respectively, the outflow of such fluid from said volume with displacements of said movable wall corresponding to said supply and outflow of the pressurized fluid, said throttling valve having integrally formed therewith abutment means capable of engaging with said movable wall when the accelerator pedal is released so as to define the position of minimum opening of the butterfly and therefore the throttling of the engine in its idling operation, said regulator further comprising sensing means for sensing engine rpm and being connected to processing means of an electronic circuit for comparing an engine rpm signal coming from said sensing means with a reference signal corresponding to a preselected rpm value lower than a threshold value, said electronic circuit being operable to deliver first electric control signals to said first valve means for supplying pressurized fluid into said volume in order to increase the engine rpm in idling condition when the engine rpm is lower than said preselected value and being operable to deliver second electric control signals to said second valve means for outflow of pressurized fluid from said volume in order to decrease the engine rpm in idling condition when the engine rpm is higher than said preselected value and lower than said threshold value.

4,280,461

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Ryoichi Okuda, Kariya; Tomoatsu Makino, Okazaki, and Katsuteru Miwa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 9, 1979, Ser. No. 82,755
Claims priority, application Japan, Oct. 13, 1978, 53-126327
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—418 **4 Claims**



1. A contactless ignition system for internal combustion engines comprising:

an alternator operated in synchronism with rotation of an engine to generate an AC output;

a bias-up circuit disposed to generate a DC output which increases nonlinearly in accordance with the number of revolutions of said engine in such a manner that the change of said DC output is small when said rotational speed is low but increases with an increase in said rotational speed; and

a voltage comparison circuit disposed to receive a bias changing in accordance with the DC output of said bias-up circuit and respond to said bias and the AC output of said alternator to generate a rectangular wave output for determining making and breaking of a primary current in an ignition coil,

wherein said voltage comparison circuit applies to said bias-up circuit a signal corresponding to the AC output of said alternator and having the same frequency therewith, and wherein said bias-up circuit comprises a circuit responsive to said signal having the same frequency as the frequency of said AC output to generate an output of a magnitude proportional to the speed of said engine, and a function circuit response to said output proportional to engine speed to generate said DC output whose change is small when the speed of said engine is low but increases with an increase in engine speed.

4,280,462

ELECTRONICALLY CONTROLLED CARBURETOR FOR INTERNAL COMBUSTION ENGINE

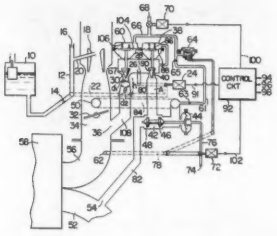
Hiroshi Kuroiwa, Hitachi, and Yoshishige Oyama, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,237
Claims priority, application Japan, Aug. 11, 1978, 53-97243
Int. Cl.³ F02M *23/04*
U.S. Cl. 123—437 **29 Claims**

1. An electronically-controlled carburetor for an internal combustion engine, comprising:

an air horn connected between an external air cleaner and an intake manifold of the engine and having a venturi section provided upstream of an internal fluid path of the air path and a throttle valve provided downstream of the same fluid path;

a float chamber for containing a liquid fuel;
a main fuel path having a main nozzle opened to said venturi section, for introducing a main liquid fuel supplied from said float chamber into said air horn through said main nozzle;
a constant pressure chamber;
first means for maintaining the internal pressure of said constant pressure chamber at a predetermined value lower than the atmospheric pressure;
a control fuel path for introducing a control liquid fuel supplied from said float chamber, into said constant pressure chamber;



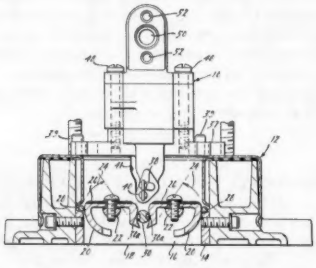
second means for controlling the amount of said control liquid fuel that passes through said control fuel path;
third means for introducing the control liquid fuel introduced into said constant pressure chamber, into said air horn in the neighborhood of said throttle valve; and
electronic control circuit means for generating a first electrical control signal and applying said first electrical control signal to said second means so that the amount of said control liquid fuel passing through said control fuel path is controlled in a manner so that the air-fuel ratio of the fuel supplied to the engine is adjusted in accordance with the running conditions of the engine.

4,280,463

FUEL SPRAY BAR FOR INTERNAL COMBUSTION ENGINE

Kenneth A. Graham, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 9, 1979, Ser. No. 83,086
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—445 **1 Claim**



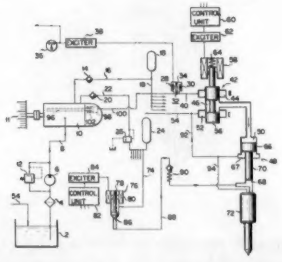
1. In an internal combustion engine having structure defining an induction passage and a spray bar unit for spraying fuel into the induction passage wherein the spray bar unit comprises a body, a pair of spray tubes projecting from the body into the induction passage, said spray tubes each comprising a plurality of spray orifices spaced along the length and on the downstream side thereof for spraying fuel in a direction generally downstream of the induction passage, means for supplying fuel via said body through the spray tubes for spraying via said orifices into the induction passage and a dispersion element disposed in said passage transverse to the direction of flow through said induction passage downstream of said spray tubes having a concave dispersion surface facing upstream of the passage and wherein one of said tubes is disposed spaced upstream of the induction passage from the dispersion element and arranged so that its orifices cause fuel sprayed therefrom to impinge upon the upstream concave surface of the dispersion element, the improvement characterized in that the other spray tube is disposed slightly spaced upstream of the induction passage relative to the one tube and arranged so that its orifices spray fuel to impinge upon the upstream surface of the wall of said one tube, said other tube being spaced upstream of said one tube a distance which is less than the distance by which said one tube is spaced upstream of said dispersion member, said other tube spraying fuel onto said one tube only during conditions requiring increased engine power.

4,280,464

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Seikichi Kanai; Kunihiko Komiyama, and Koichi Togashi, all of Oyama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 30, 1979, Ser. No. 43,628
Claims priority, application Japan, May 29, 1978, 53/63384
Int. Cl.³ F02M *51/00, 37/04*
U.S. Cl. 123—447 **3 Claims**



1. A fuel injection control system for an internal combustion engine, comprising:
injection pump means connected to the engine and driven thereby, said injection pump means including delivery control means for controlling the delivery of fuel therefrom and connected to a source of fuel supply;
first accumulator means connected to said injection pump means for receiving an output therefrom;
solenoid-operated spool valve means connected to said first accumulator means;
fuel injection valve means having a piston and a plunger formed therein and also having a piston chamber and a plunger chamber defined therein, the piston chamber being connected to said spool valve means;
fuel injection nozzle means connected to said fuel injection valve means;
shut-off valve means provided between said first accumulator means and said spool valve means and adapted to close when the engine is not in operation and open when the engine is in operation;
second accumulator means connected to said injection pump means for receiving an output therefrom;
solenoid-operated metering valve means connected to said second accumulator means for metering the amount of fuel injected through said fuel injection nozzle means, said metering valve means being connected to the plunger chamber of said fuel injection valve means; and
control means connected to both solenoids of said spool

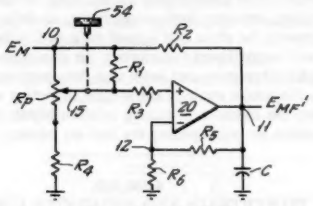
valve means and said metering valve means for controlling the operation thereof wherein said delivery control means is connected to said first accumulator means and is operated by the pressure of fluid from said first accumulator means.

4,280,465

THROTTLE CONTROL FOR AN ELECTRONIC FUEL-INJECTION CONTROL CIRCUIT

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 16, 1980, Ser. No. 169,365
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—494 **8 Claims**



1. In an electronic fuel-injection control circuit for an internal-combustion engine, wherein the output of a voltage source is variably tapped by a potentiometer to derive a throttle-controlling voltage for controlled generation of an injector-operating pulse of duration reflecting instantaneous amplitude of the throttle-controlling voltage, the improvement wherein the potentiometer is part of a network having (a) input-connection means having a signal pole adapted for source-voltage connection and (b) output-connection means having a signal pole for delivery of throttle-controlling voltage, a first resistor and the full resistance of said potentiometer series-connected across said input-connection means with one end of the potentiometer resistance connected to the signal pole of said input-connection means, voltage-dividing resistor means having an intermediate tap and connected across said output-connection means, a second resistor interconnecting said signal poles, said second resistor being of very much lower resistance than either of the tap-defined fractions of said voltage dividing means, said potentiometer having a throttle-control wiper arm selectively movable to variably tap a fraction of the source voltage, comparator means having an output connection to the signal pole of said output-connection means and having two input connections adapted for differential response to separate voltages to be compared, one of said input connections being connected to said arm and the other of said input connections being connected to said tap, whereby the voltage-dividing placement of said tap may provide a predetermined modification of the curve of output-connection voltage change in respect of source voltage as a function of wiper-arm displacement.

4,280,466

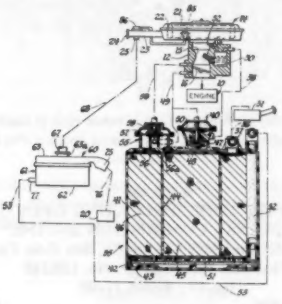
EVAPORATIVE EMISSION CONTROL DEVICE

Leslie K. Walters, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1979, Ser. No. 23,597
Int. Cl.³ F02M *25/08, 33/02*
U.S. Cl. 123—520 **2 Claims**

1. In an engine having a fuel supply system including a fuel tank, a main canister containing a main body of fuel vapor storage material, a vent line means for delivering fuel vapor from the fuel supply system to the storage material, a throttle valve controlled induction passage means for delivering air to the engine, the induction passage means including a heat stove for heating air and having an air inlet located in heat exchange relationship to the exhaust manifold of the engine and an air outlet for supplying engine heated air, as controlled by a snorkel damper mechanism, into the induction passage means upstream of the throttle valve, a canister air vent line to the canister, and a purge means from the canister for delivering fuel vapor stored in the storage material therein to the induction passage downstream of the throttle valve, the improvement comprising:

a fuel vapor secondary canister containing a secondary bed of fuel vapor storage material therein; said secondary canister defining an air flow path therethrough and being connected at one end to the air outlet of the air heat stove and having its other end connected in flow communication as controlled by the snorkel damper mechanism with



the induction passage means upstream of the throttle valve; said secondary bed of vapor storage material being positioned in said flow path between opposite ends thereof; and a port means in said secondary canister opening at one end into said secondary bed on the downstream side thereof in terms of heated air flow through said air path and connected at its opposite end to the canister vent line, whereby any flow of fuel vapor from the main canister will be stored in said secondary bed of fuel vapor storage material in said secondary canister so that during engine operation heated air flowing through said secondary canister will rapidly purge all fuel vapor therefrom.

4,280,467

AIR-FUEL MIXTURE RATIO CONTROL USING ELECTROSTATIC FORCE

Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 784,722, Apr. 5, 1977, Pat. No. 4,183,337. This application Jul. 26, 1979, Ser. No. 61,029
Claims priority, application Japan, Apr. 6, 1976, 51-37729; Apr. 6, 1976, 51-37730; May 6, 1976, 51-50935; Jun. 28, 1976, 51-75584
Int. Cl.³ F02B *51/00;* F02M *27/00*
U.S. Cl. 123—536 **10 Claims**

1. Arrangement for use with an internal combustion engine, comprising in combination:

means for producing first and second electrostatic charges of opposite polarities;

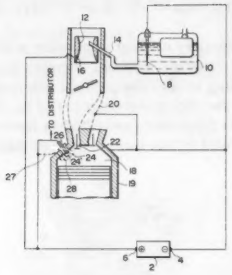
means for forming a combustible air-fuel mixture;

a first electrode connected to said electrostatic charging means for imparting said first charge to a liquid fuel introduced into said combustible air-fuel mixture forming means;

a plurality of combustion chambers, each combustion chamber including a spark plug disposed therein for igniting the air-fuel mixture admitted thereinto; and

a plurality of second electrodes, one each being provided within each of said combustion chambers and being con-

nected to said electrostatic charging means for receiving said second charge from the electrostatic charging means;



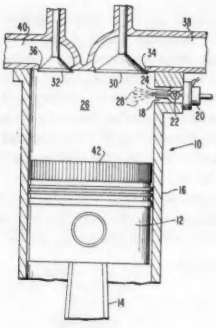
whereby the air-fuel mixture is made rich in each combustion chamber in the vicinity of said second electrode.

4,280,468

REGENERATIVE RECIPROCATING OPEN CYCLE INTERNAL COMBUSTION ENGINE

Mitchell W. Millman, 5699 Venado Ct., San Jose, Calif. 95123

Filed Feb. 11, 1980, Ser. No. 120,210
Int. Cl.³ F02M *31/08*
U.S. Cl. 123—546 **18 Claims**



1. In an internal combustion engine having an exhaust stroke, an intake stroke, and a compression stroke: means defining a cylinder having an air intake port and an exhaust gas port; a piston moveable in the cylinder; reciprocal intake and exhaust valves moveable into and out of closing relationship with the intake and exhaust ports, respectively, whereby exhaust gases can exit from the cylinder during the exhaust stroke, intake air can enter the cylinder during the intake stroke, and compression of the air can occur during the compression stroke; a porous, heat retaining regenerator member between the piston and said valves; and means shiftably mounted in the cylinder for placing the regenerator in the path of the exhaust gases during the exhaust stroke and in the path of the intake air during the compression stroke, whereby the exhaust gases will heat the regenerator member during the exhaust stroke and the regenerator member will heat the compression air during the compression stroke.

12. In a method of operating an internal combustion engine having a cylinder, a moveable piston in the cylinder, and intake and exhaust valves comprising: providing a heat storage and exchange region in the cylinder with said region being shiftably mounted in the cylinder for movement relative to the piston; directing the exhaust gases in the cylinder in one direction through said region during the exhaust cycle of the engine and when the region is at a first position in the cylinder to cause the storage of heat in the region; drawing fresh combustion air into the cylinder when the region is at a second position in the cylinder; passing the fresh air in the opposite direction through said region in heat exchange relationship to the heat energy stored thereby to heat the fresh air as the region moves from said second position to said first position; injecting a combustible fuel into the cylinder between the piston and the region in mixing relationship to the preheated combustion air; and igniting the fuel-air mixture.

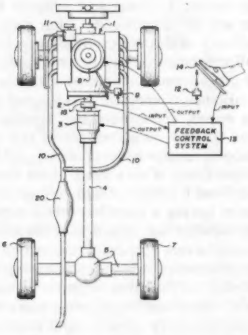
18. In a method of operating an internal combustion engine having a cylinder, a moveable piston in the cylinder, and intake and exhaust valves comprising: providing a heat storage and exchange region in the cylinder; gating the exhaust gases from a first part of the cylinder, through the region and into a second part of the cylinder to cause storage of the heat energy from the exhaust gases in the region during the exhaust cycle of the engine; drawing fresh combustion air into the cylinder; compressing the air in said second part; gating the compressed air in said second part and causing the compressed air to pass through said region and into said first part to heat the air during the intake cycle of the engine; injecting a combustible fuel into the cylinder in mixing relationship to the preheated combustion air; and igniting the fuel-air mixture.

4,280,469

POWERTRAIN AND APPARATUS USING A CONTINUOUSLY VARIABLE RATIO TRANSMISSION TO IMPROVE FUEL ECONOMY

David P. Ganoung, 4406 Chicksaw Rd., Memphis, Tenn. 38117

Continuation-in-part of Ser. No. 767,060, Feb. 7, 1977. This application Mar. 14, 1979, Ser. No. 20,916
Int. Cl.³ F02B *33/00*
U.S. Cl. 123—568 **23 Claims**



1. Apparatus for improving the operating efficiency of a homogeneous charge, spark ignition internal combustion engine, comprising:

a continuously variable ratio transmission having a relatively wide range of ratios, having a power input shaft coupled to a power output shaft of the engine and having a power output shaft,

operator control means for providing an unthrottled flow of intake charge to the engine for combustion and for concurrently providing ratio selection throughout a sufficiently wide operating ratio range of said transmission to facilitate regulation of the torque delivered to a load by said transmission output shaft to a desired value which varies widely while the speed of said transmission output shaft remains constant,

and fuel metering means for controlling the composition of said unthrottled flow of intake charge admitted to the engine for combustion, said fuel metering means providing as a first constituent of said intake charge a substantially stoichiometric air-fuel mixture and providing a second diluting constituent of said intake charge comprising

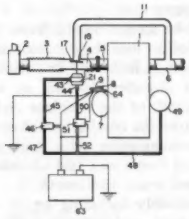
recirculated exhaust gas and being in a proportion to said first constituent inclusively between that proportion which substantially minimizes the brake specific fuel consumption of the engine and that proportion which produces incipient combustion miss of the engine, said two inclusive boundary proportions being defined for existing operating conditions of the engine including the existing speed of said engine power output shaft, the existing density of said stoichiometric air-fuel mixture and the existing composition of said second intake charge constituent.

4,280,470

THREE-STEP EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Tatehito Ueda, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 11, 1979, Ser. No. 102,450
Claims priority, application Japan, Aug. 15, 1979, 54-104303
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **7 Claims**



1. In a diesel engine, comprising an exhaust system, an inlet system, and an exhaust gas recirculation system;

an exhaust gas recirculation control system, comprising:

an exhaust gas recirculation control valve, which controls the amount of exhaust gas recirculated from the exhaust system to the inlet system through the exhaust gas recirculation system; and

a means for actuating the exhaust gas recirculation control valve, which positions the exhaust gas recirculation control valve selectively and steppedly at one of three states, that are: a first state in which it provides substantially zero exhaust gas recirculation ratio, a second state in which it provides a medium exhaust gas recirculation ratio, and a third state in which it provides a maximum exhaust gas recirculation ratio, according to the load on the engine.

4,280,471

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

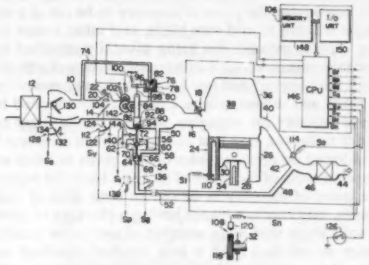
Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 4, 1980, Ser. No. 109,482
Claims priority, application Japan, Jan. 22, 1979, 54-6414
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **10 Claims**

1. In an internal combustion engine including an air-fuel mixture supply system having a throttle valve incorporated therein, an exhaust system, an exhaust gas recirculation passageway for recirculating exhaust gases from the exhaust system to the mixture supply system at controlled rates, and an intake air bypass passageway for allowing air to be admitted at controlled rates into the mixture supply system downstream of the throttle valve when the throttle valve is in a minimum-open angular position thereof, a control system comprising, in combination;

valve means operative to control the flow rate of the exhaust gases to be recirculated through said exhaust gas recirculation passageway and the flow rate of air to be passed through said intake air bypass passageway,

an electric motor operatively connected to said valve means for actuating the valve means in response to electric signals supplied to the motor, and



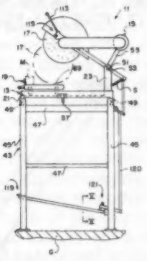
a control circuit responsive to variable parameters related to prescribed operational conditions of the engine for operating said motor on the basis of said parameters.

4,280,472

MASONRY SAW

Clarence D. Cochran, Blytheville, Ark., assignor to John Cochran, Tunica, Miss.

Filed Nov. 19, 1979, Ser. No. 95,670
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—13 R **4 Claims**



1. A masonry saw for placement on a plank member of a scaffold, said saw comprising:

(a) a base means having a bed, having an upwardly extending member attached to said bed, and having a plurality of downwardly extending foot members attached to said bed; said foot members being arranged so as to fit on opposite sides of the plank member of the scaffold to substantially firmly attach said base means to the plank member;

(b) a motor means attached to said upwardly extending member of said base means, said motor means including a rotating shaft;

(c) a masonry saw blade attached to said shaft of said motor means for rotating above said bed of said base means;

(d) a carriage means slidably mounted on said bed of said base means for supporting a piece of masonry to be cut and for moving the piece of masonry into said saw blade, said saw blade being movable between raised and lowered positions above said carriage means, said carriage means including first and second support portions, said second support portion being pivotally attached to said first support portion to allow said second support portion to be pivoted relative to the longitudinal axis of said carriage means, said carriage means including cinch means for

locking a piece of masonry to be cut to said second support portion, said cinch means including first and second flange members positioned above said first support portion, said second flange member being movable towards said first flange member to lock a piece of masonry to be cut to said second support portion;

(e) miter means for being attached to said carriage means and for positioning the piece of masonry to be cut at a specific angle relative to said saw blade, said miter means including a pivot member for being pivotally attached to said carriage means about a substantially vertical axis aligned with the plane of said saw blade, said miter means including first and second arm members fixedly attached to said pivot member for engaging portions of the piece of masonry to be cut; said first and second arm members being positioned on opposite sides of said pivot member and on opposite sides of the plane of said saw blade for supporting the piece of masonry to be cut on both sides of said saw blades, said carriage means having a plurality of apertures spaced about said pivot member of said miter means, said miter means including a peg member attached to said second arm member for being positioned in one of said apertures in said carriage means;

(f) handle means for moving said saw blade between said raised and lowered positions; and

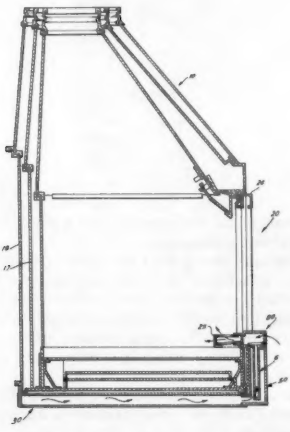
(g) pressure limit means for limiting the amount of pressure applied to said saw blade when said saw blade is moved to said lowered position by said handle means; said pressure limit means including a spring means located between said saw blade and said handle means.

4,280,473

FIREPLACE HAVING OUTSIDE AIR SUPPLY

Rodney A. Hempel, Huntington, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,416
Int. Cl.[3] F24B *1/18*; F24H *3/00*
U.S. Cl. 126—120 **8 Claims**



1. An outside air supply system and combustion chamber closure assembly including a frame for removably mounting in surrounding relation with the vertical walls, top wall and hearth forming the combustion chamber opening and at least one door operably mounted thereto;

air passage means formed in the frame at hearth level for introduction of air into the combustion chamber;

an outside air system including an outside air duct which is coupled to a chamber defining an air plenum formed below the hearth of the fireplace and an air cap assembly extending across the combustion chamber opening in fluid communication with said air passage means formed in said frame and said chamber defining the air plenum formed below the hearth;

said air cap assembly including an air discharge housing having a top wall, opposed side walls and a vertical louvered wall coupled to said top wall;

damper means, operably mounted in the air cap assembly and being adjustable between an outside air mode position and a room air mode position so that when said at least one door is closed, only outside air or room air will be introduced into the combustion chamber at hearth level whereby said air supply is sufficient for fuel combustion while providing an excess of air which flows upwardly between the burning fuel and the closure assembly; and

said damper means being pivotally mounted in said housing to cover the louvered vertical wall of said air cap housing when in said outside air mode position and to cover the air plenum when in said room air mode position.

5. A prefabricated fireplace assembly for mounting in a structure comprising:

a combustion chamber having an open front and a hearth;

a closure assembly including a frame surrounding the combustion chamber opening and at least one door operably mounted thereto;

air passage means formed in the frame at hearth level for introduction of air into the combustion chamber;

an outside air system including an outside air duct which is coupled to a chamber defining an air plenum formed below the hearth of the fireplace and air cap assembly extending across the combustion chamber opening and is in fluid communication with said air passage means formed in said frame and said chamber defining the air plenum formed below the hearth;

said air cap assembly including an air discharge housing having a top wall, opposed side walls and a vertical louvered wall coupled to said top wall;

damper means, operably mounted in the air cap assembly, and being adjustable between an outside air mode position or a room air mode position so that when said at least one door is closed, only outside air or room air will be introduced into the combustion chamber at hearth level whereby said air supply is sufficient for fuel combustion while providing an excess of air which flows upwardly between the burning fuel and the closure assembly to maintain safe fireplace temperatures and to protect said at least one door from damage by radiant heat generated by the burning fuel; and

said damper means being pivotally mounted in said housing to cover the louvered vertical wall of said air cap housing when in said outside air mode position and to cover the air plenum when in said room air mode position.

4,280,474

HEAT HUGGER

Harvey L. Ruegg, Sr., 9020 S. Hosmer, D-54, Tacoma, Wash. 98444

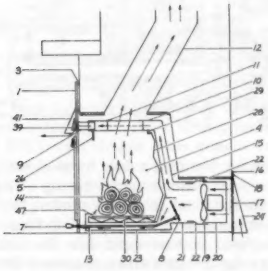
Continuation-in-part of Ser. No. 82,700, Oct. 9, 1979. This application Jul. 21, 1980, Ser. No. 170,694
Int. Cl.[3] F24B *7/00*
U.S. Cl. 126—121 **10 Claims**

1. In a fireplace combustion chamber having an adjustable forced air heating insert forming a heat exchanger means, a telescoping dual intake chamber with an outside source of ambient air, a cover for the front of the existing fireplace combustion chamber having a forced air outlet in an upper portion thereof an sleeve means for telescopically connecting said air outlet to said heat exchanger means, a means to control the amount and velocity of outside air entering the combustion chamber and the amount of outside air entering the heat exchanger, and means for guarding the front cover and the heat exchanger means from flame damage comprising:

(a) a heat exchanger having a hollow rectangular air chamber extending in a continuous fashion from a position

adjacent the forced-air outlet on the cover across the top of the combustion chamber and down its rear face communicating into a top section of a duel intake chamber which communicates with an outside source of ambient air through a lower portion of the rear wall of the fireplace combustion chamber, said top portion of the heat exchanger having a cylindrical channel therein of less diameter than the width of the heat exchanger, perpendicular to and through its height at the center of the portion spanning the top of the fireplace combustion chamber, open at both its ends with its side impervious to air to define a channel through which exhaust gas from the combustion chamber pass to the chimney flue of the existing fireplace, said heat exchanger has an external removable means associated with the combustion chamber side of the heat exchanger for the protection thereof;

(b) an airtight cover for the front of the existing fireplace combustion chamber having a means for attachment to the frontal surface of the existing fireplace so that air cannot pass from the interior of the structure into the combustion chamber of the existing fireplace, said cover is equipped with self-closing means for access to the combustion chamber, for insertion of fuel materials, a lever extending through said cover and connected to an air flow control means which is operatively associated with said dual intake chamber to control the rate of burn within the combustion chamber, said sleeve which communicates with the forced air outlet extending rearward along the



top of the combustion chamber and is of such outside dimension as to fit telescopingly inside the portion of said heat exchanger extending across the top of the combustion chamber so that the effective length of this top portion of the heat exchanger is variable by inserting or retracting this sleeve, a means for blocking the passage of air through said outlet is connected to said cover andjacent said forced air outlet, and means to guard the frontal cover from flame damage is connected to that portion of the heat exchanger extending across the top of the combustion chamber;

(c) said dual intake chamber has a telescoping portion which inserted between the exterior wall of the existing fireplace and the lower rear surface of the combustion chamber and is covered on the exterior wall of the fireplace by a louvered screen and rain hood which is secured by suitable means to the exterior wall, a variable speed intake fan is located in the telescoping portion of the dual intake chamber for introducing outside ambient air into the heat exchanger means and for introducing air for combustion into a combustion chamber intake channel means, said combustion chamber intake channel means is comprised of an air chamber which is located adjacent the bottom of the combustion chamber and which extends across the full width thereof, said combustion chamber intake channel communicates at the rear side thereof with the dual intake chamber, the front side of said combustion chamber intake channel introduces the air for combustion into the combustion chamber and has means associated therewith to direct the flow of air down and back across the bottom of the combustion chamber while precluding blowback of a flame into said combustion chamber intake channel, said flow control means comprises a butterfly damper which is located between said intake fan and the rear side of said combustion chamber intake channel and which is of such a size as to be capable of closing off the combustion chamber intake channel completely

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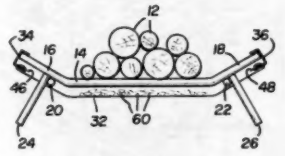
4,280,475

SCREEN FOR FIREPLACE GRATE

Peter W. Truran, 6092 Meyers, Brighton, Mich. 48116

Filed Jan. 14, 1980, Ser. No. 111,490
Int. Cl.³ F23H *13/00*
U.S. Cl. 126—164 **5 Claims**



1. In combination with a fireplace grate of the type for supporting logs to be burned a first distance above the floor of a fireplace, said grate including a plurality of spaced apart log support members, each log support member having first and second ends, the improvement comprising a screen, and means for attaching said screen to said grate a second distance below said grate, said second distance being less than said first distance, so that when logs are burned on said grate, the hot coals which result from burning said logs fall from said grate and rest on and are supported by said screen; said second distance being sufficiently small so that hot coals aid in completely burning logs on the grate and aid in igniting unburned logs placed on said grate; and said first distance exceeds said second distance by a sufficient amount so that air can flow upwardly through said screen to maintain said hot coals burning; said screen attaching means including a pair of opposed spaced apart C-shaped channels, each of said channels including an upstanding base and spaced apart parallel upper and lower legs, said lower leg being provided with an elongated slot which extends substantially the full length of the channel to receive said screen, the first channel of said pair of channels being frictionally retained on the first ends of said plurality of log support members and the second channel of said pair of channels being frictionally retained on the second ends of said plurality of log support members.

4,280,476

STOVE HAVING AUXILIARY DAMPER OPERABLY CONNECTED TO ACCESS DOOR

James E. Webb, Rte. #1, Box 460, Wingate, N.C. 28174

Filed Dec. 31, 1979, Ser. No. 108,560
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—286 **14 Claims**

1. In a stove having a combustion chamber including a lower zone for burning combustibles therein, an access opening for inserting combustibles therethrough into the combustion chamber, and at least one access door for normally closing the access opening, the combination therewith of

means defining a smoke passage extending along an upper portion of the stove above the zone for burning combustibles in the combustion chamber and having a rear portion adapted to communicate with a chimney for exhausting the products of combustion from the combustion chamber,

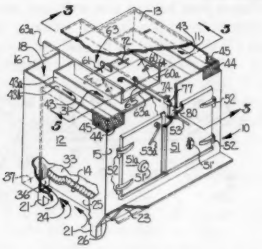
said smoke passage having a main opening and an auxiliary

opening therein for communication with the interior of the combustion chamber,

regulator damper means associated with said smoke passage for normally adjustably restricting the flow of the products of combustion from the combustion chamber through said main opening and said smoke passage to the chimney,

auxiliary damper means normally closing said auxiliary opening,

said main opening being located adjacent the stove access door so that heated air and products of combustion normally flow in a generally sinuous path toward the access door and then upwardly and away from the access door and into said main opening,



said auxiliary opening being located substantially further away from the access door and more closely adjacent the rear portion of the smoke passage than said main opening, and

means operably associated with said auxiliary damper means and the stove access door for effecting movement of said auxiliary damper means from the normally closed position to the opened position prior to the access door being opened for redirecting the products of combustion through said auxiliary opening and thus further away from the access door so as to thereby prevent the escapement of smoke through the access opening when the access door is opened.

4,280,477

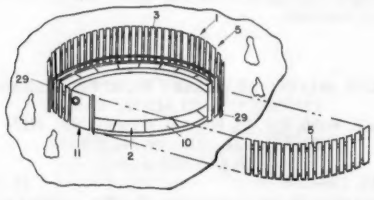
COMBINATION FENCE AND SOLAR HEATER FOR SWIMMING POOLS

David L. Divine, 10244 Blue Water Hwy., Lowell, Mich. 49331

Filed Jan. 24, 1980, Ser. No. 114,808

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—416 **11 Claims**



1. A combination fence and solar heater for swimming pools, comprising:

a fence shaped for extending about the periphery of a swimming pool area and restricting ingress and egress therefrom;

said fence comprising a plurality of interconnected pickets, and having heat exchanger means formed in at least a portion thereof; said heat exchanger means comprising a number of said pickets preselected in accordance with the climate in which said combination fence and solar heater is installed, and being arranged in said fence to face the direction of predominant sunlight; said preselected pickets having an exterior surface, a water carrying passageway extending therethrough with an inlet and an outlet communicating with the water in the swimming pool, and means for absorbing heat energy from sunlight impinging on the exterior surface of said selected pickets and conducting said heat to said water carrying passageway;

means for flowing the water in said swimming pool through said preselected pickets during daylight hours, whereby solar energy absorbed by the exposed exterior surface portion of the preselected pickets is transferred to the water flowing therethrough, thereby simultaneously heating the water in the swimming pool, and providing a protective safety barrier about the swimming pool.

4,280,478

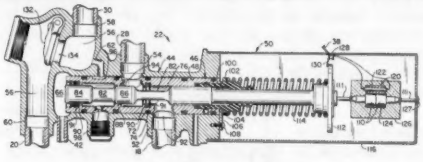
FREEZE PROTECTION APPARATUS FOR SOLAR COLLECTORS

Eugene F. Duval, 432B W. Meadow Dr., Palo Alto, Calif. 94306; David P. Bagshaw, 922 Lathrop Pl., Stanford, Calif. 94305; Michael A. Kast, 15 Bishop La., Menlo Park, Calif. 94025; Gilbert M. Masters, 1450 Mills Ct., and Harry T. Whitehouse, 15 Bishop La., both of Menlo Park, Calif. 94025

Filed Nov. 13, 1978, Ser. No. 960,399

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—420 **9 Claims**



1. In a system for warming a fluid by solar energy, the system including a solar collector array having an input conduit for receiving the fluid and an output conduit for discharging the fluid, a reservoir having an output line for supplying the fluid to be warmed and an input line for receiving fluid warmed by the solar collector array, and means for circulating the fluid from the reservoir, through the solar collector array, and back to the reservoir, freeze protection apparatus for draining the fluid from the solar collector array when the fluid within the array drops to a predetermined temperature, the apparatus comprising:

valve means interconnecting the reservoir input and output lines to the input and output conduits of the solar collector array, the valve means including a drain port and a valve element that is movable between:

(a) a first position for establishing mutually exclusive fluid communication between the reservoir output line and the input conduit and the output conduit and the reservoir input line, respectively,

(b) an intermediate position for establishing fluid communication between the reservoir output line and the input and output conduits simultaneously, and

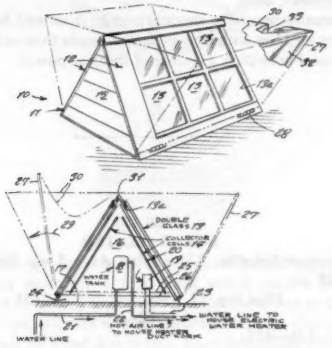
(c) a second position for terminating fluid communication between the reservoir output line and the input and output conduits and for communicating the input and output conduits to the drain port, whereby fluid is drained from the solar collector array; a source of an electric current;

thermally activated actuator means, including heater means coupled to the valve means for moving the valve element from the second position, through the intermediate position to the first position when the electric current is applied to said heater means and to move the valve member from the first position to the second position when the electric current is removed therefrom; and

sensor means communicating the electric current to the actuator means for monitoring the temperature of the fluid

contained in the solar collector array, the sensing means being operable to interrupt communication of the electric current to the actuator when the termperature being monitored reaches said predetermined temperature.

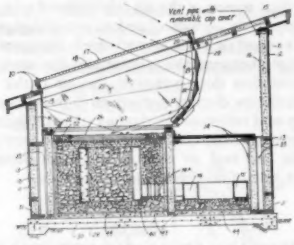
4,280,479
SOLAR HEAT COLLECTOR
Arie B. Sykes, Jr., Rte. 2, Box 170, Boonville, N.C. 27011
Filed Jan. 7, 1980, Ser. No. 109,867
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—426 **1 Claim**



1. A solar heat collector, comprising, in combination, an A-frame type, enclosing structure having inclined opposite side frames fitted with double glass panels, collector cells behind said panels, and a water tank and wristatic fan inside said structure, for supplying hot water and hot air to a house; a quantity of rip rap rock under said collector cells being covered by sheets of sheet metal and sawdust, for insulation of an interior enclosure of said structure; and a pivotable exterior frame, fitted with a transparent sheet, being hinged to a lower edge of each said side frame, each said exterior frame being a same size and same shape as said side frames, and a tent-like, flexible, transparent sheeting supported upon said structure and exterior frames, said sheeting extending between an apex of said A-frame type structure and the upper edge of each said exterior frames, said sheeting being in a taut position when said exterior frames are outwardly pivoted and in inclined position, so as to form an insulating space between each of said side frames and said exterior frame; and a triangular, flexible, transparent sheet between a side edge of each said side frames and said exterior frame, closing opposite side ends of said space.

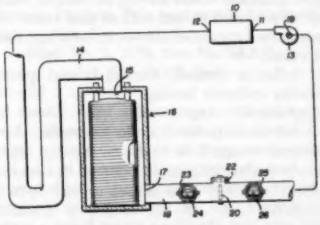
4,280,480
SOLAR HEATING PLANT
Sulpicio B. Raposo, P.O. Box 888, Frankfort, Ky. 40602
Filed Mar. 17, 1980, Ser. No. 130,837
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **11 Claims**

1. A solar plant, comprising of:
a. multiple reflectors composed of fixed and adjustable highly reflective panels so arranged to catch low and high angle rays of sunlight, wherein the fixed reflectors are placed vertically on the top cover of a primary compartment along the border of the compartment's three sides, the adjustable reflectors suspended from the rafters of a shed, whereby each individual reflecting panel is positioned at a convenient angle with the vertical plane to catch and pitch sun rays at various angles;
b. a primary compartment to house the air heating assembly, including piled rocks or bricks, a solar heat collector and tubing coils for water heating, and having means to likewise confine hot air for transfer of heat energy to an air heating assembly and a coil of water conduit;
c. a secondary compartment for storing some of the escaped heat from the primary compartment, said heat used to preheat an air stream flowing through an air return duct and water passing through a tubing coil housed in said compartment;
d. a solar heat collector concealed in the primary compartment positioned on top of piled rocks or bricks having a double layer of looped conduit, the said loop starting from the letter "S" shape and spaces between looped tubing filled with aluminum or copper grits;
e. an air heating assembly encased in piled rocks or bricks in the primary compartment, wherein the said assembly



draws heat from piled rocks or bricks and confined hot air within said compartment and transfers retained heat to an air stream flowing through the said assembly;
f. a looped water conduit coiled in the secondary compartment and around the inner peripheral wall of the primary compartment, wherein the said water conduit draws heat through contact with piled rocks or bricks and hot air confined in said compartment; and
g. a relatively air tight shed to house and protect the elements of the solar plant from influence of chill temperature, the said shed provided with skylight, single entrance with air tight shutter and short vent pipes with removable cap cover through the back or front wall of said shed for releasing excessive hot air within said shed during summer time.

4,280,481
FORCED-AIR HEAT EXCHANGE SYSTEM
Joseph E. Fodor, 712 Shore Dr., Boynton Beach, Fla. 33435
Filed Mar. 31, 1980, Ser. No. 135,493
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **5 Claims**



1. In a forced air heat exchange system having:
a heater having an air inlet and an air outlet;
blower means operatively connected to circulate air through said heater between said air inlet and said air outlet;
heat exchanger having an air inlet operatively connected to said air outlet of the heater to receive heated air therefrom, said heat exchanger having an air outlet;

and air recirculation duct means operatively connected between the air outlet of said heat exchanger and the air inlet of said heater;

the improvement which comprises:

a recirculation damper operatively connected in said duct means to control the air flow therethrough;

temperature differential sensing means operatively connected to said recirculation damper to control its position in accordance with the temperature difference between air inside said duct means and ambient air outside said duct means;

a normally-closed first draft regulator operatively arranged between the exterior and the interior of said duct means at the air inlet side of said recirculation damper and operable to open automatically when said recirculation damper closes, whereby to vent the interior of said air recirculation duct means at the air inlet side of said recirculation damper to the outside of said air recirculation duct means;

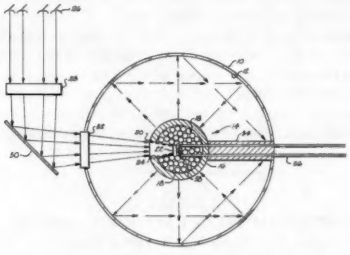
and a normally-closed second draft regulator operatively arranged between the exterior and the interior of said air recirculation duct means at the air outlet side of said recirculation damper and operable to open automatically when said recirculation damper closes, whereby to admit ambient air from the outside of said air recirculation duct means into said air recirculation duct means at the air outlet side of said recirculation damper.

4,280,482

METHOD AND APPARATUS FOR COLLECTING, INTENSIFYING AND STORING SOLAR ENERGY

Jack E. Nilsson, Sr., Easley, S.C., assignor to Seige Corporation, Greenville, S.C.

Filed Jul. 16, 1979, Ser. No. 57,733
Int. Cl.³ F24J 3/02
U.S. Cl. 126—430 **9 Claims**



1. An apparatus for collecting, intensifying and storing solar energy comprising:

a hollow spherical vessel having an interior wall;

a window provided in said wall of said vessel for allowing concentrated rays from the sun to enter into the interior of said vessel;

a solar collector centrally carried in said spherical vessel, said solar collector having;

(i) a spherically shaped wall,

(ii) a substantially black collector surface for absorbing thermal energy from said concentrated rays, and

(iii) a heat absorbing means carried in said container for absorbing and storing thermal energy from said collector surface, and for causing radiant energy to be emitted, said heat absorbing means being a material which goes from a solid state to a liquid state upon absorbing thermal energy from said heat collector surface,

a polished reflective surface carried on an interior wall of said spherical vessel for reflecting said radiant energy emitted by said heat absorbing means back to said spherically shaped wall of said solar collector.

9. A method of collecting, intensifying and storing solar energy comprising:

concentrating and directing rays from the sun through a window of a sealed spherical vessel;

absorbing thermal energy from said rays with a collector;

accumulating and storing said thermal energy absorbed by said collector with a heat absorbing member centrally located in said spherical vessel causing said heat absorbing member to emit radiant energy and causing said heat absorbing member to change from a solid state to a liquid state as it absorbs thermal energy;

reflecting said radiant energy emitted by said heat absorbing member with a reflective surface carried on an interior wall of said spherical vessel back to said heat absorbing member; and

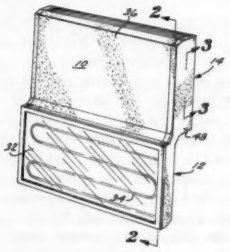
externally removing thermal energy from said heat absorbing member with a heat transfer means from said spherical vessel providing a source of thermal power.

4,280,483

SOLAR HEATER

I. Lawrence Schaffer, 134 Covina Ave., Long Beach, Calif. 90803

Filed Sep. 11, 1980, Ser. No. 186,341
Int. Cl.³ F24J 3/02
U.S. Cl. 126—433 **10 Claims**



1. A solar heater comprising:

collector and evaporator means including a collector for exposure to the sun to collect solar heat, and further including a tubular evaporator in heat exchange relation to said collector and having liquid refrigerant therein adapted to be vaporized upon receipt of solar heat from said collector; and

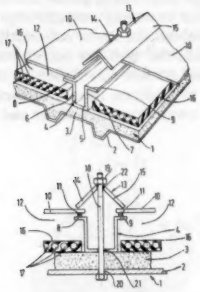
condensor and storage means located above said collector and evaporator means and including a tubular condensor in fluid communication with said evaporator for receiving vapor refrigerant rising naturally from said evaporator upon being heated by said solar heat, said condensor and storage means further including solid phase change material within which said condensor is embedded in heat exchange relation, said material being adapted to liquify at a predetermined working temperature upon receipt of heat from said condensor whereby said heat may be released to a surrounding environment colder than said working temperature during a phase change of said material from a liquid to a solid state, and whereby the cooled, liquid refrigerant is enabled to flow by gravity into said evaporator, said liquid refrigerant in said evaporator obstructing continued circulation of refrigerant through said condensor and said evaporator in the absence of collection of solar heat by said collector thereby to reduce heat loss through said evaporator during the night.

4,280,484

SOLAR ROOFS

Federico Mancosu, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Oct. 3, 1979, Ser. No. 81,457
Claims priority, application Italy, Oct. 4, 1978, 28392 A/78
Int. Cl.³ F24J *3/02*; F28F *7/00*; E04B *1/62*
U.S. Cl. 126—450 **6 Claims**



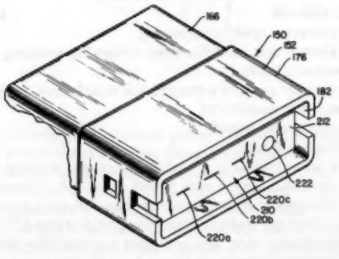
6. A solar roof for a building comprising from adjacent to the building upwardly a rigid sheet which covers the said building, an insulating foam resin pad disposed face to face on the rigid sheet, laterally spaced elastomeric plates disposed on the said foam resin pad face to face, a conduit means embedded in said plates for flow of fluid therethrough, means for flowing a fluid through said fluid conduit means, laterally spaced support members having a base disposed on the said foam resin pad between said spaced elastomeric plates, laterally spaced walls upstanding from the said base and fixed thereto, said upstanding walls terminating above said base in ends having outwardly extending flanges which lie in a plane substantially parallel to the plane of the said base, light transparent sheets disposed along one edge thereon on said flanges and disposed above the said insulating pad with an air space between said transparent sheet and said insulating pad, a peak member above said light transparent sheets and covering the space therebetween, and means for securing the said peak member to the said rigid sheet with the foam resin pad therebetween, whereby the said laterally spaced support members can deform without imparting localized stresses to said light transparent sheets.

4,280,485

COMPRESSION DEVICE WITH SIMULATOR

Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 11, 1980, Ser. No. 139,321
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—24 R **7 Claims**



1. A device for normally applying compressive pressures with a pair of sleeves against a patient's limbs from a source of pressurized fluid, comprising:

first and second elongated pressure sleeves for enclosing a length of the patient's limbs having chamber means;

means for intermittently inflating and deflating the chamber means; and

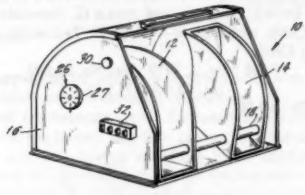
means for simulating operation of said second sleeve when only said first sleeve is in use or to simulate operation of said first sleeve when only said second sleeve is in use, with the simulating means being connected to the inflating means.

4,280,486

FOOT EXERCISER

Steven R. Hofstein, North Brunswick, N.J., assignor to World Medical Marketing Corporation, New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 85,330
The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—25 B **26 Claims**



1. A foot exercising device, comprising:

a pair of foot pedals; and

motor means for reciprocating said foot pedals in a first direction, said motor means including slip means enabling said foot pedals to be reciprocated independently of said motor means, said motor means including a motor, said motor means reciprocating said pedals in said first direction and at a frequency which is determined by the speed of said motor, said slip means permitting said pedals to be reciprocated in said first direction and at a rate which is faster than the rate determined by the speed of said motor.

4,280,487

PULSATING INFLATABLE-DEFLATABLE PAD ASSEMBLY AND METHOD

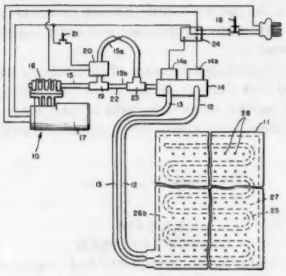
Barry N. Jackson, De Pere, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 5, 1979, Ser. No. 54,837
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—33 **23 Claims**

1. A pad assembly for supporting a bedridden patient to reduce the development of decubitus uclers, said assembly including a pad having two sets of interlaced inflatable-deflatable air chambers and having a multiplicity of perforations in its top surface to permit the escape of air from said chambers for deflation thereof, a porous air-permeable liquid-absorbent cover sheet upon said pad, and inflating means for cyclically and alternately inflating each of said air chambers while the other of said chambers is deflating because of the escape of air through the perforations thereof, wherein the improvement comprises:

pulsing means provided by said inflating means for pulsing the air flowing essentially unidirectionally to said pad at a frequency within the range of about 15 to 65 pulses per

second to produce a rapidly pulsing discharge of puffs of air from said perforations and into said cover sheet for



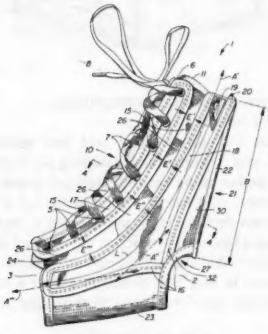
promoting the evaporation of moisture absorbed by said sheet.

4,280,488

ANKLE SUPPORT WITH ELASTIC PANEL

Robert D. Polsky, Berkeley, and Alexis G. Daneman, Danville, both of Calif., assignors to Orthopedic Technology, Inc., San Leandro, Calif.

Filed Nov. 2, 1979, Ser. No. 90,801
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 H **7 Claims**



1. In a semi-rigid ankle support having a largely sock-like shape, said support having a back, a front, and two side portions, the improvement which comprises two elastic panels extending substantially the length of said support, one of said panels being included in each side portion of said support, each panel including substantially overlapping sections of elastic material, each section being aligned so that the direction of elastic stretch of said section is substantially normal to the axis of the leg or foot located adjacent said section of elastic material.

4,280,489

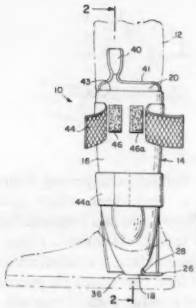
ANKLE BRACE

Glenn W. Johnson, Jr., 10 Friar Tuck Cir., Summit, N.J. 07901

Continuation of Ser. No. 894,087, Apr. 6, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 141,925
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 H **8 Claims**

1. Orthopedic apparatus for use in connection with the lower extremity and for immobilizing the ankle against inversion or eversion while permitting planto flexion and dorsiflexion thereof comprising: a base portion and a pair of spaced-apart sidewall portions attached to opposed side regions of said base portion and extending upwardly therefrom to form a generally U-shaped stirrup member adapted to be fitted about the lower extremity with the heel of the lower extremity resting on the base portion and the upstanding sidewall portions confronting corresponding opposed side portions of the lower extremity, each of said sidewall portions extending longitudinally above the ankle of the lower extremity and having a predetermined lateral extent such that the corresponding opposed longitudinally extending side edges of said sidewall portions are spaced far enough apart from each other to define a pair of openings disposed opposite the front and back portions of the lower extremity respectively when said stirrup member is fitted about the lower extremity as aforesaid,

each of said sidewall portions being attached to its corresponding base portion side region by means of a flexural hinge so as to facilitate flexure of each sidewall portion toward and away from each other and toward and away



from corresponding confronting side portions of the lower extremity, and

a pair of flexible support members, each one of said flexible support members being substantially coextensively disposed in a juxtaposed manner with respect to the inwardly facing surface of a corresponding one of said sidewall portions so as to engage a corresponding confronting portion of the side of said lower extremity when said sidewall portions are flexed toward each other, at least one of said flexible support members comprising an inflatable bladder, and

fastening means for maintaining said sidewall portions and said support members in engagement with corresponding confronting side portions of the lower extremity when said stirrup member is fitted about said lower extremity as aforesaid.

4,280,490

UNIVERSAL SPLINT

James L. Santy, Box 783, 1362 Woodside Ave., Park City, Utah 84060

Filed Nov. 29, 1979, Ser. No. 98,672
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—88 **11 Claims**

1. A universal splint comprising,

a backboard that includes strap means for securing it across a person's back;

an extremity support arranged for attachment to said backboard that consists of,

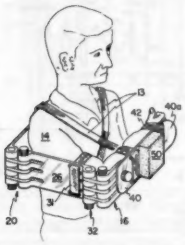
an upper arm board;

a forearm board;

first pivot coupling means that includes a pivot and connects said upper arm board to said backboard and is arranged to travel across said backboard to provide for positioning said extremity support to extend from either backboard side and provides a capability for locking said extremity upper arm board with respect to said backboard;

second pivot coupling means that includes a pivot and connects between said upper arm and forearm boards for providing full circle rotation capability of the one board across the other and provides for locking of the one board with respect to the other;

hinge means for arrangement with each said first and second pivot coupling means for providing a full circle rotation capability of said upper arm board towards said backboard and of said upper arm board towards said forearm board wherein the axis of said rotation is at a normal angle to the axis of rotation of each said pivot, and includes locking means for prohibiting hinge operation, at least one of which locking means includes;



fingers that extend, respectively, from a pivot coupling means and an end of said upper arm board;

tab means for interdigitating with said fingers;

holes formed appropriately through said fingers and tab means for providing, when properly aligned, a passage therethrough;

pin means for installation in the passage formed through said aligned fingers and tab means;

means for clamping the interdigitated fingers and the tab means together; and

means for fastening said extremity support to a person's extremity.

4,280,491

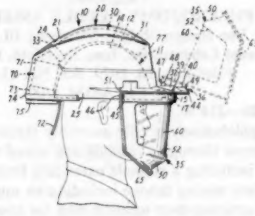
POWERED AIR RESPIRATOR

Richard C. Berg, Bloomington, and Emil J. Kvall, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1980, Ser. No. 127,953

Int. Cl.[3] **A61F** *9/06*

U.S. Cl. 128—201.24 **6 Claims**



1. A powered air respirator providing hardhat, respiratory, eye and face protection comprising a hardhat, a shell member secured to said hardhat and spaced therefrom to form a generally dome shaped passageway therebetween, a face shield assembly attached to and depending from the front of said shell member having a peripheral edge which extends down the sides of the user's face from a point just slightly below the temples and across the bottom of the chin, a transparent face shield in said face shield assembly, face sealing means on the peripheral edge of said face shield assembly and terminating adjacent each temple of the user, to seal against a user's face from temple to temple, the terminal ends of said face sealing means being spaced from said shell member to define air exists from each side of said face shield assembly adjacent the temples of the user, and means for providing filtered air through said dome shaped passageway in a stream over the user's face and through said air exits above the user's temples.

4,280,492

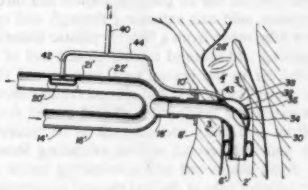
TRACHEOSTOMY TUBE

Phillip B. Latham, 111 Conn Ter., Lexington, Ky. 40508

Filed Oct. 5, 1979, Ser. No. 82,327

Int. Cl.[3] **A61M** *16/00, 25/00*

U.S. Cl. 128—207.15 **8 Claims**



1. An apparatus for allowing a person with a tracheostomy to speak while being ventilated comprising,

a curved tracheostomy tube for insertion into the trachea beneath the larynx, said tube having first and second open ends and also having an orifice in its tubular wall in a position which resides inside the trachea when the tube is inserted with the first open end extending to the outside of the throat,

valve means associated with said orifice for selectively providing and preventing egress from it,

ventilator apparatus including cycling means for periodically feeding oxygen under positive pressure into said first open end of said tracheostomy tube and for periodically allowing exhalation of breath, and

means responsive to the cycling of said ventilator apparatus for controlling said valve means for preventing egress from said orifice when said oxygen is fed under positive pressure and for providing egress from said orifice when said exhalation occurs, whereby exhaled breath enters the trachea and rises therein past the larynx to allow speech.

4,280,493

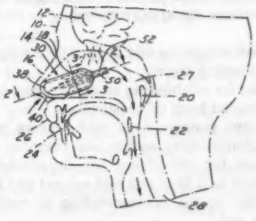
NOSE SHIELD

Edward L. Council, 4161 McClellan, Detroit, Mich. 48214

Filed Jan. 30, 1980, Ser. No. 85,390

Int. Cl.[3] **A61M** *15/08*

U.S. Cl. 128—207.18 **7 Claims**



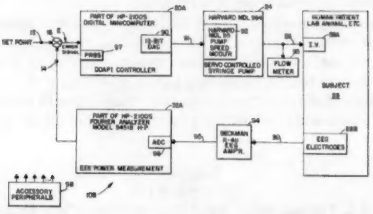
1. A nose shield including nasal insert means adapted to be located in and to sealingly conform to the lining of the nostril of the nose, effective to prevent air containing oxygen required

for a person to breathe from entering the nasal passages of the nose and further effective to direct such air to a person's air passage leading from the nostril to the back of the mouth and to the throat for breathing purposes thus by-passing the nasal passages, said nasal insert means comprising a unitary, thin wall, generally bowl shaped body made from a flexible plastic material and having a longitudinal axis, opened at one end and closed at the other end, with the closed end being of dome shape and adapted to conform to and contact the lining of the nostril adjacent the air passage, with the side wall of the body being of generally cylindrical configuration and located adjacent said open end of said body, said side wall of the body adapted to engage the lining of the nostril and with the open end of the body turned outwardly from within the nostril, a relatively small opening provided in the closed dome shape end of said body through which air entering the nostril is directed towards the air passage, mouth and throat for breathing purposes, said axis extending through said opening, an air delivery tube made from a flexible plastic material mounted in said opening and secured to said closed end of said body for delivering air to the person's air passage and throat, said air delivery tube having first and second tubular sections, said first section extending rearwardly of said closed dome shape end away from said body and adapted to be received in said air passage and said second section extending forwardly of said closed dome shape end and terminating inside of said body, said air delivery tube at the end thereof terminating within said body adapted to receive air entering the nostril and directing and delivering same therethrough to the other end thereof adapted to be located in the air passage.

4,280,494
SYSTEM FOR AUTOMATIC FEEDBACK-CONTROLLED ADMINISTRATION OF DRUGS

Robert J. Cosgrove, Jr., 5009 Juiata Dr., Birmingham, Ala. 35210, and Victor F. Smolen, 227 Timbercrest Rd., West Lafayette, Ind. 47905

Filed Jun. 26, 1979, Ser. No. 52,242
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—213 R **11 Claims**



1. Automatic feedback controlled apparatus for administering drugs to a subject to achieve a desired level of anesthesia, comprising:

(a) means for sensing the subject's EEG signal and for producing a response signal corresponding to said EEG signal;

(b) means for administering said drugs to the subject responsive to an actuating signal;

(c) preset means for establishing an order signal corresponding to the desired level of anesthesia;

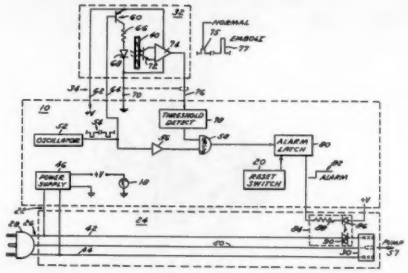
(d) digital means connected to said sensing means, said means for administering and to said response signal producing means for identifying the drug/subject system model between said drug and said subject and for producing controller signals corresponding to said identified relationship; and

(e) a digital control loop connected to said means for sensing, means for administering, preset means and said digital means, for processing a difference signal, formed between said response signal and said order signal by a comparator, into a proportional component and an integral component of said difference signal to comprise said actuating signal, and further having means for establishing the ratio of proportional and integral components by said controller signals.

4,280,495
AIR EMBOLI DETECTION

Seymour R. Lampert, Ann Arbor, Mich., assignor to Sarns, Inc., Ann Arbor, Mich.

Filed Nov. 24, 1978, Ser. No. 963,311
Int. Cl.³ A61M *5/14*
U.S. Cl. 128—214 E **4 Claims**



1. In apparatus for use in cardiopulmonary bypass surgery or the like and including a blood pump, means coupled to said pump for providing an extracorporeal blood flow path and sensor means disposed adjacent said path for detecting emboli in said path and coupled to said pump for deactivating said pump upon detection of any said emboli, said sensor means comprising a light source and light detection means disposed adjacent to said path and alarm means responsive to light incident upon said detection means from said source for indicating emboli in said path and deactivating said pump, the improvement wherein said sensor means further comprises electrical power supply means for energizing said source only at preselected periodic intervals with said source being otherwise de-energized and gate means electrically connected to said detection means, said power supply means and said alarm means for monitoring said detection means and enabling operation of said alarm means responsive to said detection means only at preselected times corresponding to said preselected periodic intervals.

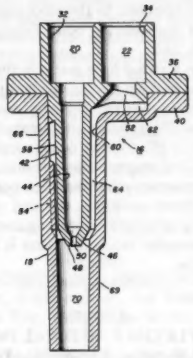
4,280,496
PHLEBOTOMY NEEDLE ASSEMBLY

Armand R. Van Baelen, Rolling Meadows, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 16, 1979, Ser. No. 12,825
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 R **11 Claims**

1. In a phlebotomy needle assembly through which whole blood is drawn through a cannula and mixed with an anticoagulant, and including a cannula extending from a hub; a blood-anticoagulant mixing device including an upper portion comprising an anticoagulant solution inlet for coupling to a source of anticoagulant and a blood-anticoagulant mixture outlet for coupling to outlet tubing, and an elongated member extending downwardly from said anticoagulant inlet said elongated member defining a bore that is coaxial with said anticoagulant inlet; a lower portion comprising a housing for surrounding said elongated member and a blood inlet for coupling to said hub, said inlet extending downwardly from said housing; said upper portion and said lower portion being initially separable; said mixture outlet being offset with respect to said inlets; said blood inlet defining a mixing chamber whereby the anticoagulant solution fed into the anticoagulant inlet enters directly into

the mixing chamber to mix with the whole blood, said mixing chamber comprising the volume defined by said blood inlet and located below said elongated member; a passage defined by said mixing device and communicating with said mixing chamber and said mixing outlet for providing an outlet flow



path through said mixing device for the blood-anticoagulant mixture; and a radially extending flange extending from said upper portion and a radially extending flange extending from said lower portion, and means connecting the bottom of said upper flange portion to the top of said lower flange portion.

4,280,497

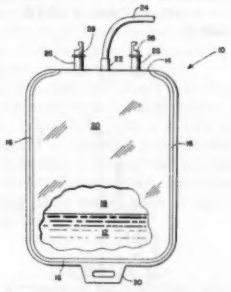
CONTAINER FOR PLATELET STORAGE

Willis L. Warner, and Edward J. Nelson, both of San Rafael, Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Oct. 9, 1979, Ser. No. 83,136

Int. Cl.³ A61J *1/00*

U.S. Cl. 128—272 **5 Claims**



1. A flexible container having a concentrate of viable platelets stored therein which is suitable for intravenous administration wherein the container comprises plasticized polyvinyl chloride containing about 30 to about 50 percent by weight of tri 2-ethylhexyl trimellitate and about 3–5 percent by weight of a heat stabilization system, the platelets being at an acceptable level of viability for up to about five days storage at about 22° C.

4,280,498

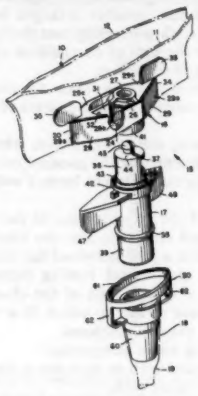
VALVED DRAIN ASSEMBLY FOR UROSTOMY POUCH

Marvin E. Jensen, Niles, Ill., assignor to Hollister Incorporated, Chicago, Ill.

Filed Oct. 22, 1979, Ser. No. 86,832

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—283 **41 Claims**



1. A drain assembly for a urostomy pouch comprising a body member having walls defining a generally cylindrical discharge chamber having a side opening and an end opening; said body member being adapted to be mounted within a urostomy pouch with said side opening communicating with the interior of such pouch and said end opening directed externally thereof; a passage-providing tubular valve member having a generally cylindrical sleeve portion coaxial with said chamber and rotatably received within said chamber through said end opening for rotation about the common axis of said sleeve portion and chamber; said sleeve portion having an open-ended tubular stem projecting beyond said body member; said sleeve portion having a lateral port registrable with said side opening of said body member when said valve member is rotated into an open position and being out-of-register with said side opening when said valve member is rotated into a closed position; said sleeve portion also having an end wall closing the passage of said valve member at the end of said sleeve portion remote from said stem; locking means securing said body and valve members against axial displacement; and a drainage tube equipped at one end with coupling means for releasably engaging said stem.

4,280,499

ORYOTHERAPY APPARATUS

Angelo Sguazzi, Turin, Italy, assignor to Dario Bracco, Turin, Italy

Filed Jun. 7, 1979, Ser. No. 46,292

Claims priority, application Italy, Jun. 23, 1978, 68479 A/78

Int. Cl.³ A61B *17/38*

U.S. Cl. 128—303.1 **1 Claim**

1. Cryotherapy apparatus comprising:

a tubular handle having an axial pipe defining therewith an annular passage,

a tubular probe extending from the handle and closed at its end remote therefrom, the said probe containing an axial capillary tube communicating at one end with the said axial pipe of the handle and terminating at its opposite end close to the closed end of the probe, the said capillary tube and tubular probe together defining a chamber surrounding the free end of the capillary tube and an annular passage communicating the chamber with the annular passage of the handle,

a supply pipe for supplying pressurised refrigerant having an

evporation temperature less than the ambient temperature to said axial pipe of the handle in order to effect cooling of the probe by expansion and evaporation of the refrigerant as it passes from said capillary tube into said surrounding chamber of the probe, the expanded refrigerant being discharged through said annular passages,

an electromagnetically-operable pressure reducing valve connected into the refrigerant supply pipe and including a movable valve closure member arranged to give unrestricted or restricted flow of refrigerant through the valve in dependence on the state of energisation of an electromangetic winding of the valve,

a temperature sensor arranged to sense the temperature of the handle and to output a signal indicative of that temperature,

a first electrical heating element arranged, when energized to warm refrigerant entering the pressure reducing valve,

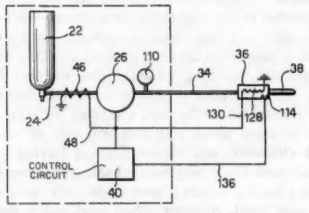
a second electrical heating element located within the handle, and

an electronic control circuit responsive to the temperature sensor output signal indicating that the handle temperature has fallen below a predetermined threshold value, to energise the first and second heating elements and to change the state of energisation of the electromagnetic winding of the valve to that in which flow through the pressure reducing valve is restricted;

said pressure reducing valve comprising:

a tubular body provided with an inlet union for connection to the refrigerant supply pipe,

an electromagnet housed in the tubular body adjacent the



inlet union and comprising said winding controlled by the electronic control circuit and a hollow magnetic core axially slidable within the winding,

a rod movable in response to movement of the magnetic core and carrying at one end the valve closure member, said closure member being arranged to cooperate with a valve seat provided in the inlet union,

an outlet union for refrigerant provided on the side of the tubular body downstream of the electromagnet, and

manually operable control means arranged to vary the position of the valve closure member with respect to said valve seat in a continuous manner between positions corresponding to complete opening and complete closure of the pressure reducing valve;

said manually operable control means comprising:

a sleeve axially slidable but non-rotatably mounted within the tubular body downstream of the electromagnet, the said sleeve being provided with a peripheral axial groove communicating with the said outlet union and the end face of the said sleeve remote from the electromagnet being helically contoured,

a hollow, cylindrical element threadedly engaging within the sleeve, the end of the said cylindrical element facing towards the electromagnetic projecting outside the sleeve so that it can abut against the magnetic core of the said electromagnet,

a rod member slidably mounted in an axial opening made in the said end of the hollow cylindrical element facing the electromagnet, one end of the rod member extending into the interior of the magnetic core coaxially with the rod mounting the valve closure member and the opposite end of the rod member being provided with an enlargement located within the internal cavity of the said hollow cylindrical element, resilient means for urging said enlargement of said rod against the said end of the hollow cylindrical element provided with the axial opening mounting the rod member,

a rotatably mounted shaft extending through the end of the tubular body opposite to the inlet union, the end of the shaft outside the tubular body being provided with a control knob, and

a pin located in a radial hole made in the shaft adjacent its inner end, the said pin having one end projecting from the radial hole to engage the helically contoured end of the sleeve so that the rotation of the shaft by means of the control knob is effective to cause axial movement of the sleeve and of the magnetic core resulting in movement of the valve closure member between completely open and completely closed positions, the said one end of the rod member being arranged to abut against the rod carrying the closure member when the latter is in said completely closed position.

4,280,500

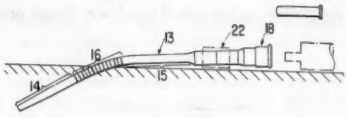
TUBULAR FLEXIBLE MEDICAL INSTRUMENT

Kazuaki Ono, 1-8, 5-chome, Koganei-shi, Tokyo, Japan 186

Filed Mar. 31, 1978, Ser. No. 892,121

Int. Cl.[3] **A61M** *25/00*

U.S. Cl. 128—348 **4 Claims**



1. A tubular flexible medical instrument for insertion into a body cavity comprising: a sintered polytetrafluoroethylene tube of solid and porous portions; said solid and porous portions alternating along the length of said tube, said porous portions having a microstructure of nodes interconnected by fibrils.

4,280,501

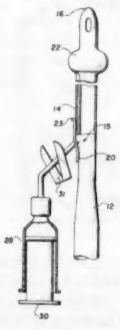
INFLATABLE CATHETER MEANS AND METHOD

John W. Foderick, Box 246, Chisholm, Minn. 55719

Filed Jun. 13, 1979, Ser. No. 48,001

Int. Cl.[3] **A61M** *25/00*

U.S. Cl. 128—349 B **9 Claims**



1. An improved inflatable catheter structure, comprising in combination, a primary catheter tube having an insertion end and an external connector end, inflatable retention collar means near the insertion end coupled by a secondary inflation

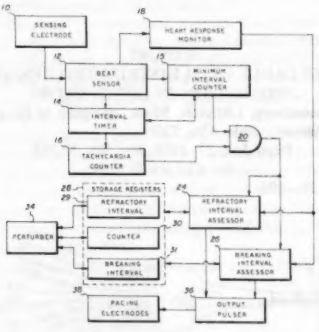
tube integral with the primary catheter tube and branching off into a resiliently deformable feed tube portion at a position near the external connector end, such feed tube portion having integrally connected to the external end thereof inflation means for selectively transferring fluid along the secondary inflation tube and into said retention collar means to inflate it, and clamping means positioned between said inflating means and the primary catheter tube adjacent said primary catheter tube having an aperture defined therein surrounding said feed tube portion which thereby retains said clamping means in a movable position to place said aperture into two opposing operational positions opening and closing said feed tube portion to the passage of fluid therethrough, thereby closing the feed tube portion when in use for severing the inflatable retention collar means from the catheter structure while retaining inflation and opening the feed tube portion for deflation after use.

4,280,502

TACHYCARDIA ARRESTER

Ross G. Baker, Jr., Lake Jackson, and Richard Van Calfee, Houston, both of Tex., assignors to Intermedics, Inc., Freeport, Tex.

Filed Aug. 8, 1979, Ser. No. 64,553
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 PG **35 Claims**



1. A method for controlling tachycardia, comprising the steps of:

detecting a tachycardia;

iniitiating a tachycardia arrest routine when said tachycardia is detected; wherein said routine includes

generating a first stimulating pulse initiated by a first tachycardia beat within a first trial interval;

monitoring a cardiac response to said first stimulating pulse;

increasing or decreasing said first trial interval as a function of said cardiac response to form a second trial interval;

generating a second stimulating pulse within said second trial interval following a second tachycardiac beat; and

continuing to derive successive trial intervals and to generate a simulating pulse within each of said trial intervals until said tachycardia is arrested.

4,280,503

BIPOLAR ELECTRODE INSERTION APPARATUS

Bernard Ackerman, Metuchen, N.J., assignor to Electro-Catheter Corporation, Rahway, N.J.

Filed Feb. 19, 1980, Ser. No. 122,568
Int. Cl.[3] A61N *1/00*
U.S. Cl. 128—419 P **23 Claims**

1. A bipolar electrode insertion apparatus comprising a syringe means capable of injecting a fluid placed therein into the body through an outlet end thereof, a hollow needle, said needle having an inlet end and an outlet end for insertion into the body, a chamber disposed in flow through communication between said syringe outlet end and said needle inlet end, said placed fluid being selectively injectable into said chamber inlet end through said syringe outlet end and therefrom through said needle into the body with said needle inserted in position therein, said chamber further comprising an entrance port for a flexible bipolar electrode means, said bipolar electrode means entrance port being in flow through communication with said

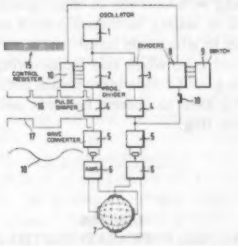
needle inlet end for selective insertion of said bipolar electrode means through said chamber entrance port into said needle and therefrom through said needle into the body with said needle inserted in position therein, seal means disposed at said chamber inlet end for selectively isolating said syringe from said chamber, said chamber and needle providing a common conduit into the body for said selectively injectable fluid and said selectively insertable bipolar electrode means.

4,280,504

DEVICE FOR TREATMENT WITH INTERFERENCE CURRENTS

Hans Rodler, Graz-Neuhart, Austria, assignor to Firma Somartec S.A., Geneva, Switzerland

Filed Jan. 16, 1979, Ser. No. 3,961
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—420 A **4 Claims**



1. In a device for providing electromedical treatment by causing a plurality of signals to be applied by electrode means to a body, said signals being of relatively different frequencies to interfere with one another in the body to be treated, including first means for generating a first relatively high frequency output signal in the form of a pulse train and second means, coupled to said first means and providing an output to said electrode means, for dividing said relatively high frequency output signal into a plurality of relatively lower frequency signals that differ in frequency by a controllable difference frequency, the improvement comprising means for controllably varying the division of said relatively high frequency output signal to one of said relatively lower frequency signals, including means for selectively deleting one of the pulses in

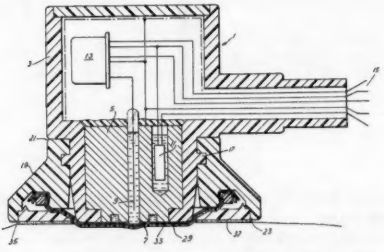
said pulse train to produce a lower frequency pulse train corresponding to one of said lower frequency signals.

4,280,505

FIXATION RING FOR TRANSCUTANEOUS GAS SENSOR PROBE

Carmelo Dali, Chesire, and David R. Rich, E. Hartford, both of Conn., assignors to Novametrix Medical Systems, Inc., Wallingford, Conn.

Filed Jun. 20, 1979, Ser. No. 50,200
Int. Cl.³ A61B 5/00
U.S. Cl. 128—635 **15 Claims**



1. A transcutaneous gas sensor probe comprising first and second electrodes one of which is an anode and the other of which is a cathode adapted to contact an ion solution,

a selectively permeable seal including a membrane for maintaining said solution in engagement with said electrodes and permitting said gas to permeate into said solution,

a housing in which said electrodes are mounted having a grasping end and a body end,

a fixation ring having a bore therethrough, a probe end and a body end, being removably attached to said housing and on which said seal is mounted including means for positively mounting said selectively permeable seal thereon

cooperative interlocking means on said housing and on said fixation ring for positively attaching said fixation ring to said housing with said seal in engagement with said electrodes and in sealing relationship with said bore so that only matter to which said membrane is permeable can pass through said bore when said fixation ring is attached to said housing, said cooperative means preventing inadvertent relative axial movement between said electrodes and said fixation ring.

4,280,506

DIGITAL WATCH/INFRARED PLETHYSMOGRAPH HAVING A REMOVABLE PULSE SENSOR UNIT FOR USE WITH A FINGER CUFF EXTENSION

Rudolf F. Zurcher, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

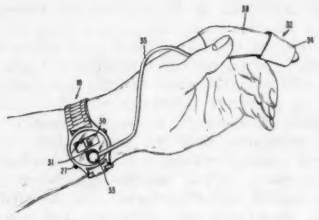
Filed May 16, 1979, Ser. No. 39,532
Int. Cl.³ A61B 5/02
U.S. Cl. 128—690 **17 Claims**

1. An infrared plethysmograph having a remote pulse sensing feature, comprising:

pulse sensing electronics having a digital display and a receptacle for alternatively receiving either a pulse sensor unit or a remote sensing cable;

a pulse sensor unit detachably mountable to said receptacle;

a remote pulse sensing cable having a connector at a first end for mounting onto said receptacle, said cable having a receptacle at the second end for receiving said pulse sensing unit; and



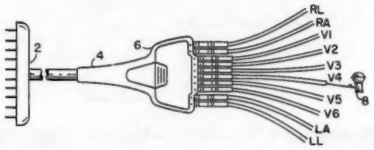
a cuff attached to said second end for securing said pulse sensing unit to a skin surface for sensing a pulse.

4,280,507

PATIENT CABLE WITH DISTRIBUTED RESISTANCE PROTECTION IN CONDUCTORS

Neil A. Rosenberg, Littleton, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 27, 1979, Ser. No. 52,364
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696 **1 Claim**



1. A yoke and trunk cable for coupling the inputs of an EKG machine to the separate leads from electrodes attached to a patient in such manner as to protect the inputs from current resulting from high voltage pulses that appear on the leads when a defibrillator pulse is applied to the patient, comprising

a trunk cable comprised of an outer protective sheath containing a conductive shield, a plurality of leads within said conductive shield, each lead having a conductor of an electrically conductive carbon loaded polymer coated with insulating material, the lengths of said leads of carbon loaded polymer being such as to provide an electrical resistance to protect an EKG machine connected to one end of said conductor from a defibrillator pulse applied to the other end,

a yoke having a plurality of pairs of connectors, one connector of each pair for receiving a pin connected to a conductor, the other connector of each pair for receiving a pin connected to a shield,

means for respectively connecting each of said connectors for receiving a conductor to one of said electrically conductive carbon loaded polymer conductors in said trunk cable, and

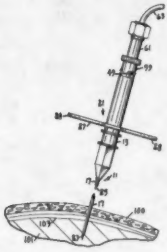
means for connecting said connectors for receiving a pin connected to a shield to said conductive shield in said trunk cable.

4,280,508

METHOD FOR POSITIONING A FLUID WITHDRAWING MEANS BY DETECTING LOCAL TEMPERATURE

M. Ismail Barrada, 45 E. Pleasant Lake Rd., North Oaks, Minn. 55110

Filed Dec. 27, 1979, Ser. No. 107,542
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—736 **6 Claims**



1. A method for withdrawing a sample of enclosed fluid from an internal organ of a living mammal which encloses said fluid, said method comprising the steps of:

(a) subcutaneously penetrating into an outer wall of said internal organ with the distal end of a cannula means such that said distal end is in contact with said outer wall;

(b) measuring the temperature of said outer wall at said distal end with a temperature-sensing probe inserted into said cannula means;

(c) penetrating further into said organ while retaining said temperature-sensing probe in its inserted position within said cannula means and continuing to measure the temperature surrounding the distal end of said cannula means;

(d) stopping any further penetration when the temperature measurement obtained according to said step (c) increases by at least about 0.1° C.;

(e) removing said temperature-sensing probe from said cannula means; and

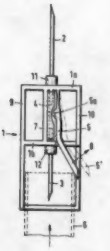
(f) withdrawing said sample of fluid from said internal organ through said cannula means.

4,280,509

VALVED BLOOD SAMPLING DEVICE

Jürgen Bethkenhagen, Heideweg 15, 5223 Nümbrecht, and Dieter Kolpe, Rosenfeldstrasse 1, 5276 Wiehl 1, both of Fed. Rep. of Germany

Filed Nov. 2, 1978, Ser. No. 956,925
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750454
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—766 **2 Claims**



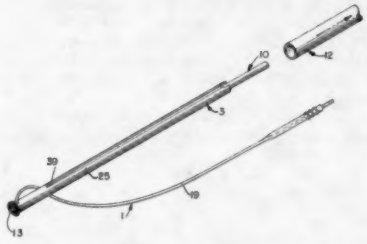
1. A device for the extraction of blood with a controllable flow, comprising a housing, an injection cannulae having a first end disposed within said housing, said injection cannulae having a pointed end extending from said housing, a discharge cannulae disposed inside said housing, a flexible tube connecting said discharge cannulae with the first end of said injection cannulae, and a resilient lever disposed in said housing and biased to squeeze closed said flexible tube when in its normal position but capable of releasing said tube upon being tilted away from its normal position, wherein said lever is so positioned that it is forced from its normal position by a tubular container when the tubular container is pushed into said housing.

4,280,510

SUTURELESS MYOCARDIAL LEAD INTRODUCER

Edward G. O'Neill, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 8, 1979, Ser. No. 10,465
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **7 Claims**



1. A body implantable lead and lead insertion assembly for use in attaching an electrode of said body implantable lead to body tissue, said lead including a flexible insulated electrical conductor extending between said electrode and a connector adapted to be connected to a medical device, said insertion assembly comprising:

(a) tubular rod means having first means at the distal end thereof for holding a portion of said lead adjacent said electrode in a position for attachment of said electrode to body tissue;

(b) cylindrical tube means defining a lumen; and

(c) slot means configured for loosely receiving an insulated portion of said insulated conductor for releasably containing said conductor along the length of said assembly during attachment of said electrode to body tissue and for releasing said conductor upon relative axial movement of said tubular means and said rod means, said lumen being configured for loosely receiving said tubular rod means and retaining said insulated portion within slot means during attachment of said electrode to body tissue and thereafter for permitting the ready withdrawal of said tubular rod means from said lumen whereby said insulated portion may be readily withdrawn from said slot means.

4,280,511

RING ELECTRODE FOR PACING LEAD AND PROCESS OF MAKING SAME

Edward G. O'Neill, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 25, 1980, Ser. No. 124,156
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **6 Claims**

1. Body implantable lead comprising:

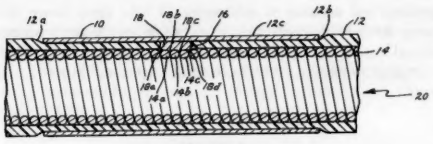
a coiled conductor having proximal and distal ends;

an electrical connector coupled to said proximal end of said coiled conductor;

a sheath of body compatible material having proximal and

distal ends covering said coiled conductor having a hole slit intermediate said proximal and distal ends;

means located within said hole means frictionally engaging said coiled conductor for electrically conducting to and from said coiled conductor; and



an electrode covering said hole and said conducting means frictionally attached to said sheath and said conducting means.

4,280,512

CARDIAC PACEMAKER ELECTRODE FOR TRANSVENOUS APPLICATION

Dieter E. Karr, Berlin, Fed. Rep. of Germany, and Scott B. Shanks, Lake Oswego, Oreg., assignors to Biotronik Mess- und Therapiegeräte G.m.b.H. & Co., Berlin, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 79,215

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2843096

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—785 **8 Claims**

1. In a cardiac pacemaker electrode for transvenous insertion including a helical lead, a wire spring arrangement in electrical contact with the lead and including wire ends for fastening the electrode in the heart, a hollow cylinder, a piston to which the wire spring arrangement is connected so that the wire ends project from one end of the piston and which is displaceably mounted in the cylinder for movement, by means of a guide wire extending through the lead, between a retraction position in which the wire ends are retracted fully into the cylinder and an extension position in which the wire ends project out of the hollow cylinder and spread apart for fastening into heart tissue, and at least one contact element which is electrically conductively connected with the wire spring arrangement and is constructed so that it resiliently contacts a region which is in permanent electrical connection with the lead, the improvement wherein the outer lateral face of said piston tapers inwardly in the direction of the end thereof from which said wire ends project and the interior wall of said cylinder presents a correspondingly tapered surface located to sealingly contact said tapered lateral face of said piston when said piston is in its extension position for sealing the interior of said hollow cylinder against body fluids, the contact between said contact element and said region is independent of external forces exerted on said spring ends, and said contact element is disposed at a location at the interior of said hollow cylinder which is sealed against body fluids.

4,280,513

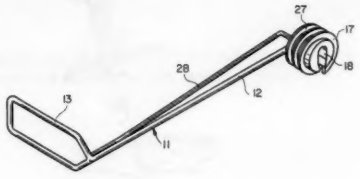
TOOL AND METHOD FOR ATTACHING ELECTRODE TO BODY TISSUE

Richard S. Gilbert, 1144 Sonoma Ave., Ste. 111, and Douglas W. Cardozo, 1111 Sonoma Ave., Ste. 302, both of Santa Rosa, Calif. 95405

Filed Jan. 7, 1980, Ser. No. 110,204

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—785 **17 Claims**



1. In a tool for attaching an electrode to body tissue, said electrode having a body with a screw-like helical conductor and a flexible electrical lead extending therefrom: an elongated handle, a driving head rotatively mounted on the handle with means for engaging the body of the electrode and holding the same in a fixed position with the helical conductor extending along the axis of rotation, and means for receiving at least one wrapping of the electrical lead about the driving head in such manner that pulling on the lead imparts a rotation to the driving head for screwing the conductor into the body tissue.

4,280,514

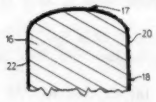
ENDOCARDIAL PACEMAKER ELECTRODE

David C. MacGregor, 81 Wimbleton Rd., Islington, Ontario, Canada

Continuation-in-part of Ser. No. 824,296, Aug. 15, 1977, which is a continuation-in-part of Ser. No. 683,382, May 5, 1976, Pat. No. 4,101,984. This application Jul. 23, 1979, Ser. No. 59,786

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—786 **14 Claims**



1. An endocardial heart pacemaker electrode for endocardial atrial and ventricular pacing constructed of electroconductive metal inert to blood and consisting of a dense rigid metal substrate and a rigid porous metal coating adhered to at least a major portion of said substrate,

said electrode having a regular geometrical shape, a maximum transverse dimension of about 0.5 to about 3 mm and a minimum longitudinal dimension of at least about 0.25 mm,

said porous coating including a plurality of metal particles bonded together at their points of contact with each other and with said substrate to form a network of interconnected pores substantially uniformly distributed throughout the coating,

said porous coating having a porosity of about 10 to about 50% by volume and a thickness of less than about 500 microns, said metal particles having a particle size selected from the group consisting of less than 100 mesh.

4,280,515

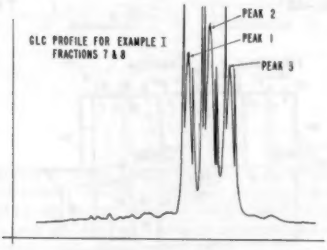
USE OF A MIXTURE OF ISOMERS OF CARYOPHYLLENE ALCOHOL OR DIHYDRO CARYOPHYLLENE ALCOHOL IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF SMOKING TOBACCO, SMOKING TOBACCO ARTICLES AND/OR SMOKING TOBACCO FLAVORS

Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 947,186, Sep. 29, 1978, Pat. No. 4,229,599. This application Dec. 21, 1979, Ser. No. 106,154

Int. Cl.³ A24B *15/30*

U.S. Cl. 131—276 **3 Claims**



1. A smoking tobacco composition consisting essentially of smoking tobacco and intimately admixed therewith an organoleptic property augmenting or enhancing quantity of a product produced according to a process for rearranging caryophyllene oxide or dihydrocaryophyllene oxide the process comprising the steps of (i) intimately admixing aluminum isopropylate, toluene and a caryophyllene derivative selected from the group consisting of caryophyllene oxide and dihydro caryophyllene oxide in order to form a mixture; (ii) heating the resulting mixture at a temperature of from 100° C. up to 150° C. for a period of time from about one up to about five hours; and (iii) recovering the rearranged caryophyllene oxide or dihydro caryophyllene oxide, a mixture of alcohols, from the reaction mass; the concentration of aluminum isopropylate catalyst in the reaction mass varying from about 0.025 molar to to about 0.75 molar; and the concentration of caryophyllene oxide or dihydro caryophyllene oxide in the reaction mass varying from about 0.25 molar up to about 1.00 molar.

4,280,516

METHOD AND APPARATUS FOR PRODUCING A CONTINUOUS FILLER OF TOBACCO OR THE LIKE

Joachim Reuland, Neu Börnsen, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

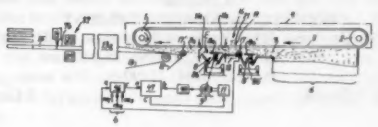
Filed Jul. 27, 1979, Ser. No. 61,352

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833118

Int. Cl.³ A24C *5/14, 5/39*

U.S. Cl. 131—84 C **42 Claims**

1. A method of producing an elongated filler which consists of fibers, especially tobacco shreds, comprising the steps of continuously forming from the fibers an elongated stream which contains a surplus of fibers and advancing the stream lengthwise; equalizing the advancing stream by removing the surplus of fibers therefrom; generating a first signal which denotes the height of the equalized stream: densifying and wrapping the equalized stream to convert the stream into the filler; generating a second signal in dependence on the mass flow of the equalized stream; correcting the second signal in accordance with a function which is indicative of a desired



hardness of the filler and represents a predetermined relationship between said first and second signals; generating a control signal in dependence on the corrected second signal; and regulating said equalizing step in dependence on said control signal so as to maintain the hardness of the filler at a constant value.

4,280,517

BRUSH ATTACHMENT TO HAIR DRESSER

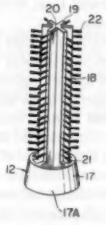
Sinji Ihara, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 769,711, Feb. 17, 1977, abandoned, which is a division of Ser. No. 602,907, Aug. 7, 1975. This application Mar. 26, 1979, Ser. No. 23,775

Claims priority, application Japan, Aug. 16, 1974, 49-94508

Int. Cl.³ A45D *20/00*

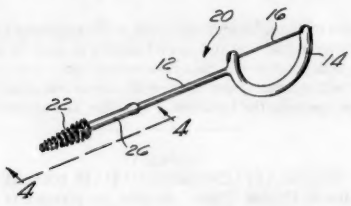
U.S. Cl. 132—9 **2 Claims**



1. A brush attachment to a hair dresser which includes air blowing means, air heating means and an air stream blowoff port at one end of said dresser, said attachment comprising a brush body having a base and a plurality of axially extending, circumferentially spaced ribs projecting from said base, said ribs defining therebetween a plurality of axial air guiding channels, and a plurality of rows of brushes having root portions planted in said ribs such that each of said rows extends in the axial direction of said brush body for holding hair wound around the brush body, said brushes having radially extended tip portions, said brush body being removably attachable to said one end of said hair dresser, said base of said attachment including surface means tapering in a direction away from said brushes, and a cover formed of a thermally conductive material and having a plurality of brush-receiving slits extending in the axial direction of said cover, an inner end of said cover being removably attachable to said base, said slits being open at said inner end of said cover to define therebetween a plurality of resilient arc-shaped segments which are resiliently expandable during longitudinal sliding movement of said segments along said tapering surface means to connect said cover to said base, said cover being dimensioned such that upon being inserted over said brush body, the periphery of the cover is positioned between said planted root portions and said tip portions of the brushes while allowing the brushes to extend from the cover through said slits, and a space communicating between said air stream blowoff port of the hair dresser and said root portions of said brushes, said slits dividing said cover into a plurality of segments of thermally conductive material

overlying respective ones of said channels so that the segments are heated by air from said channels and conduct such heat to hair wound around said segments.

4,280,518
TOOTH CLEANING IMPLEMENT
Susan M. Gambaro, 4811 Densmore St., Encino, Calif. 91436
Filed Apr. 9, 1979, Ser. No. 28,130
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—93 **2 Claims**

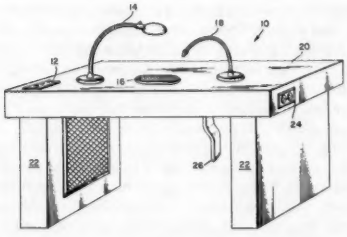


1. An implement to facilitate the cleaning of teeth comprising:

an elongated member having a fore end and an aft end, said elongated member having a first longitudinal center axis, a strand of stretched taut dental floss being connected to said fore end taking the form of a bifurcated member having a pair of spaced-apart leg members, said dental floss to be stretched between and attached to said leg members, said dental floss being parallel to said first longitudinal center axis;

a brush-like member attached to said aft end, said brush-like member having a cross-sectional size greater than the cross-sectional size of said elongated member, said brush-like member being tapered in its longitudinal direction so that the outermost end of said brush-like member essentially comes to a point, said brush-like member being attached to a resilient sleeve, said aft end of said elongated member to be inserted within said sleeve and said sleeve deforming about said elongated member thereby tightly securing said elongated member to said brush-like member, said brush-like member having a second longitudinal center axis, said second longitudinal center axis coinciding with said first longitudinal center axis.

4,280,519
ENVIRONMENTAL MANICURE SYSTEM
Virginia J. Chapman, 5556 Peacock La., Riverside, Calif. 92505
Filed Apr. 14, 1980, Ser. No. 139,898
Int. Cl.³ A45D *29/18*
U.S. Cl. 132—73.5 **8 Claims**



1. An environmental manicure table comprising:

support means;

table top means maintained by said support means;

exhaust means included in said table top means for exhausting offensive materials from the vicinity of said table top means;

misting means included in said table top means for rendering some of said offensive materials into a form more readily exhaustible by said exhaust means;

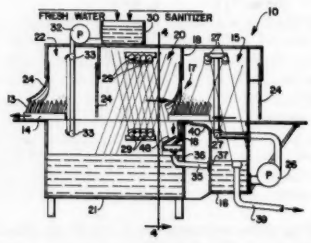
misting control means for operating said misting means;

illuminating means for enhancing visibility on said table top means;

electrical convenience outlet means for supplying electrical power to auxiliary devices as may be required;

and control panel means for governing the operation of said exhaust means, said misting means, said illuminating means, and said electrical convenience outlet means.

4,280,520
WAREWASHING MACHINE SPLASHOVER RETURN SYSTEM
Louis F. Fraula, Troy; William H. McMahon, Ludlow Falls, and Thomas B. Heckman, Troy, all of Ohio, assignors to Hobart Corporation, Troy, Ohio
Filed Sep. 12, 1979, Ser. No. 74,650
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—60 **7 Claims**



1. In a warewashing machine having first and second adjacent compartments, means including a transfer opening connecting the compartments for moving food ware sequentially therethrough, a tank for each compartment for holding liquid for that compartment, spray means for each compartment for spraying liquid from its respective tank onto the food ware therein, and means for returning liquid which falls to the bottom of each compartment to its respective tank, the improvement comprising:

a. liquid collection means positioned in one of said compartments immediately adjacent said transfer opening for capturing liquid entering said one compartment through said opening from the other compartment, said liquid collection means comprising means defining a pan having a shielded slot opened toward said transfer opening for capturing liquid directed thereto from said other compartment through said transfer opening while substantially shielded from the spray means of said one compartment for rejecting liquid directed thereto from the spray means in said one compartment, and

b. liquid return means for returning the captured liquid to said other compartment.

4,280,521
HUB ASSEMBLY FOR COLLAPSIBLE STRUCTURES
Theodore R. Zeigler, 205 S. Columbus St., Alexandria, Va. 22314
Filed Jun. 19, 1979, Ser. No. 49,904
Int. Cl.³ A45F *1/16*; A45B *19/00*
U.S. Cl. 135—4 R **4 Claims**

1. A hub assembly for collapsible structures comprising, in combination:

a first circular disc-like hub body having a plurality of radially inwardly extending slots therein and having a circular

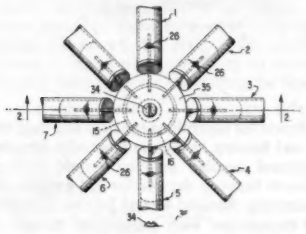
recess on one face thereof which intersects all of said slots in outwardly spaced relation to the inner ends thereof;

an interrupted retaining ring received in said recess;

a second hub body similar to said first hub body and joined in face-to-face relation therewith so that the recesses and slots of said first and second hub bodies are in registry;

a plurality of blade member, each having an apertured inner end receiving said retaining ring and projecting outwardly therefrom through an associated slot to terminate in an anchor end portion outside of said hub bodies;

a plurality of cylindrical plug members, one for each blade member and each having a longitudinally extending slot receiving the anchor end portion of an associated blade member, each such slot extending from one end of its plug member and terminating short of the opposite end thereof; and



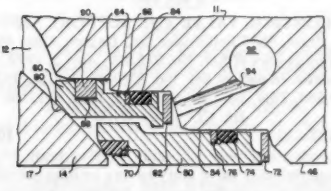
a plurality of tubular elements, one for each plug member, each tubular element receiving an associated plug member and having at least one deformed portion lockingly engaging both said plug member and the associated anchor end portion, each plug member being snugly received in its associated tubular member and each plug member terminating at said one end thereof in an end flange which is seated against the end of its associated tubular member, the anchor end portion of each blade member being of a width substantially equal to the diameter of said opposite end of the plug member and having notches intermediate its ends, each anchor end portion also having opposite side shoulders seated against said end of its associated tubular element, each plug member being formed of deformable material and each tubular member being deformed inwardly in register with said notches to deform the plug member and force the material of the tubular member locally into said notches.

4,280,522

FIRE SEAL FOR VALVES

Michael Pechnyo, Chicago, Ill., and Herman H. Fowler, Kearney, Nebr., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 14, 1980, Ser. No. 140,027
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—72 **11 Claims**



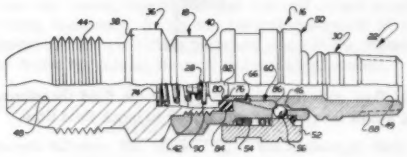
1. In a valve, a housing having fluid passages, a closure member movable between a closed position where fluid communication between said passages is interrupted and an open position where said passages are connected, a first seat ring within said housing surrounding one of said passages, resilient annular seal means between said first seat ring and the interior of said housing to prevent the passage of fluid therebetween, annular seal means between said first seat and said closure member to prevent the passage of fluid therebetween, a second seat ring of fire resistant material within said housing adjacent said first seat ring and having an annular sealing surface in engagement with said closure member, and fire resistant sealing means between said second seat ring and the interior of said body.

4,280,523

THERMAL RESPONSIVE COUPLING

James F. Norton, Berea, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Jun. 22, 1979, Ser. No. 50,952
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—74 **10 Claims**



1. A fluid coupling for use in connecting a pair of conduits in fluid communication with each other and for subsequently interrupting the fluid communication between the conduits upon heating of the coupling, said coupling including a plug body, a collar circumscribing and movably mounted on said plug body, socket means for receiving at least a portion of said plug body and holding said plug body against movement relative to said socket means while the conduits are connected in fluid communication, said socket means including means for engaging said collar to hold said plug body against movement relative to said socket means, and temperature responsive means for releasing said plug body for movement relative to said socket means when said temperature responsive means is heated to a predetermined temperature, said temperature responsive means including means for holding said plug body and collar against relative movement while the temperature of said temperature responsive means is below the predetermined temperature and for releasing said plug body for movement relative to said socket means and collar upon heating of said temperature responsive means to the predetermined temperature.

4,280,524

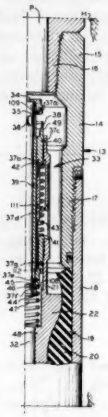
APPARATUS AND METHOD FOR CLOSING A FAILED OPEN FLUID PRESSURE ACTUATED RELIEF VALVE

Herbert W. Beimgraben, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Mar. 23, 1979, Ser. No. 23,200
Int. Cl.³ E21B *3/12, 41/00*
U.S. Cl. 137—268 **11 Claims**

1. In a valve apparatus having a hollow mandrel and having an inlet opening for fluid under pressure, an outlet opening connected to a fluid flow path, fluid pressure sensitive means responsive to fluid pressure below a first predetermined value for blocking the inlet opening and responsive to the fluid pressure at the first predetermined value for exposing the inlet opening to the fluid under pressure to establish fluid flow through the valve, and means for blocking fluid flow through

the valve, the blocking means comprising: a screen connected to said mandrel positioned between the inlet means and the



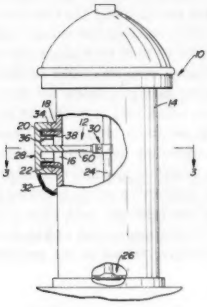
fluid flow path for normally passing the fluid therethrough; and means for plugging said screen to block fluid flow.

4,280,525

TAMPERPROOF CAP ASSEMBLY FOR HYDRANT

Francis R. Byrnes, Philadelphia, Pa., assignor to Center Compression Lock Company, Inc., Philadelphia, Pa.

Filed Apr. 18, 1979, Ser. No. 31,272
Int. Cl.³ E03B 9/06
U.S. Cl. 137—296 **11 Claims**



11. A tamperproof cap assembly for a hydrant having a housing provided with an outlet port and a nozzle surrounding said outlet port and a valve stem rod displaceable from a first position within the hydrant housing, comprising:

a cap adapted to be displaceably mounted on said hydrant nozzle;

said cap having a member which extends substantially laterally within said hydrant housing towards said valve stem rod;

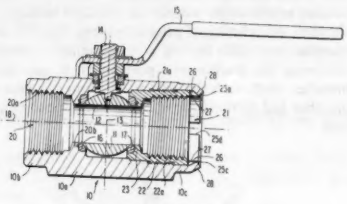
resilient locking means secured to said valve stem rod for slideably engaging said cap member within said hydrant housing to lock said cap in position on said hydrant when said valve stem rod is in said first position and said cap is displaceably mounted on said hydrant nozzle and for slideably releasing said cap member to permit displacement of said cap when said valve stem rod is displaced from said first position.

4,280,526

LOCKABLE END PLUG FOR VALVE HOUSINGS

Ricardo Gonzalez, Holden, Mass., assignor to Worcester Controls Corp., West Boylston, Mass.

Filed Apr. 15, 1980, Ser. No. 140,532
Int. Cl.³ F16K 43/00
U.S. Cl. 137—315 **15 Claims**



1. A valve comprising a housing having a movable valve element therein for controlling the flow of a fluid through such housing, said housing having an internally threaded first hollow cylindrical member defining a fluid flow passageway which extends between the interior and exterior of said housing, an externally threaded second hollow cylindrical member in thread engagement with the internal threads of said first hollow cylindrical member, said second hollow cylindrical member also being internally threaded for thread engagement with an externally threaded pipeline to effect fluid flow communication between the pipeline and the interior of said valve housing, one of said first and second hollow cylindrical members having at least two recessed notches in its periphery, said notches being disposed in angularly spaced relation to one another about the central axis of said one cylindrical member, and the other of said first and second hollow cylindrical members having at least two integral locking tabs which are respectively complementary in shape to the shapes of said recessed notches, said locking tabs being angularly spaced from one another about the central axis of said other cylindrical member and being bent from the material of said other member into engagement with the walls of respective ones of said recessed notches to prevent relative rotation between said first and second hollow cylindrical members, whereby said pipeline may be rotationally manipulated relative to said second hollow cylindrical member without effecting concurrent relative rotation between said first and second hollow cylindrical members, said cylindrical members being adapted to be disassembled from one another after removal of said locking tabs from said notches, whereafter, following reassembly of said cylindrical members, said cylindrical members may be relocked to one another by bending at least one new locking tab into at least one of said notches from a portion of said other cylindrical member that is located between the original removed locking tabs.

4,280,527

FLUID CONTROL VALVE AND SUPPORT ASSEMBLY

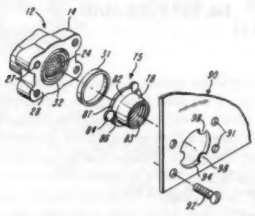
James F. Pease, 5805 Folkestone Dr., Dayton, Ohio 45459

Continuation-in-part of Ser. No. 025,869, Apr. 2, 1979, which is a continuation-in-part of Ser. No. 818,433, Jul. 25, 1977, Pat. No. 4,149,554. This application Feb. 11, 1980, Ser. No. 120,554
Int. Cl.³ F16K 51/00
U.S. Cl. 137—343 **19 Claims**

1. In a valve assembly including a valve body of molded plastics material, said valve body having an inlet portion defining an inlet and an outlet portion defining an outlet, means supported by said valve body for controlling the flow of fluid from said inlet to said outlet, said inlet portion including a plurality of parallel spaced holes disposed generally around said inlet, a metal fitting including a threaded tubular portion projecting from an outwardly projecting integral flange por-

tion disposed adjacent said inlet portion of said valve body, means forming a fluid-tight seal between said flange portion and said inlet portion, a sheet metal bracket having an aperture aligned with said tubular portion of said fitting and a plurality of holes aligned with said holes within said inlet portion of said valve body, and a plurality of threaded fasteners extending within said holes for securing said bracket to said valve body with said flange portion of said fitting disposed therebetween, the improvement wherein said fitting comprises a drawn sheet metal fitting, said sheet metal fitting having means defining at least one recess extending inwardly from the periphery of said flange portion, said recess forming an outwardly projecting ear portion having a thickness less than the thickness of said flange portion, said aperture within said support bracket being of sufficient size to receive said flange portion of said fitting, said support bracket including means forming at least one ear projecting inwardly into said aperture, and said ear on said bracket overlying said ear portion on said fitting and projecting into said recess within said flange portion of said fitting.

8. In a valve assembly including a valve body of molded plastics material, said valve body having an inlet portion defining an inlet and an outlet portion defining an outlet, means supported by said valve body for controlling the flow of fluid



from said inlet to said outlet, said inlet portion including a plurality of parallel spaced holes disposed generally around said inlet, a metal fitting including a threaded tubular portion projecting from an outwardly projecting integral flange portion disposed adjacent said inlet portion of said valve body, means forming a fluid-tight seal between said flange portion and said inlet portion, a sheet metal bracket having an aperture aligned with said tubular portion of said fitting and a plurality of holes aligned with said holes within said inlet portion of said valve body, and a plurality of threaded fasteners extending within said holes for securing said bracket to said valve body with said flange portion of said fitting disposed therebetween, the improvement wherein said fitting comprises a drawn sheet metal fitting, said sheet metal fitting having means defining at least one peripheral recess extending inwardly from the periphery of said flange portion and forming an outwardly projecting ear having a thickness less than the thickness of said flange portion, said aperture within said support bracket being of sufficient size to receive said flange portion of said fitting, said support bracket including means defining at least one recess extending outwardly from said aperture, and said ear on said flange portion of said fitting projecting outwardly into said recess within said bracket.

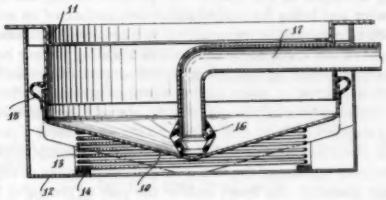
4,280,528

WASTE WATER CONVEYANCE APPARATUS

Sigvard V. Soderstrom, Hagersten, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 9, 1980, Ser. No. 138,504
Claims priority, application Sweden, Apr. 11, 1979, 7903212
Int. Cl.[3] F16K *21/00*
U.S. Cl. 137—408 **8 Claims**

1. A vacuum-operated waste water system having a casing and a two-part collecting container to which waste water flows directly from an inlet into the interior of said container, one of said parts of said container being fixed while the other of said parts is movable, a flexible bellows connecting said parts of the collecting container, a biasing means for said container which is not in contact with said incoming waste water, a discharge conduit in which vacuum prevails extending through the wall of said casing and the wall of said fixed part of the collecting container said discharge conduit being positioned above said flexible bellows, said free end of said conduit being normally sealed against a wall of said container until a



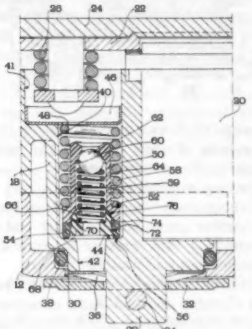
predetermined amount of waste water is received in said container wherein said container under the influence of the weight of the waste water is movable in a generally vertical direction against said biasing means, and said free end of said conduit becoming uncovered during the vertical movement of said container thereby permitting the waste water in the container to be drawn by vacuum through said discharge conduit.

4,280,529

VENTED FUEL TANK CAP

Giancarlo Silvestri, Via Mazzini 82/6, 40138 Bologna, Italy

Filed Mar. 1, 1979, Ser. No. 16,500
Int. Cl.[3] F16K *17/196*
U.S. Cl. 137—493.3 **2 Claims**



1. A vented fuel tank cap for a motor vehicle, comprising a body occupying only part of the cross-sectional area of the cap and having a venting passage therethrough which is stepped to form a first abutment surface between a first portion of the passage and a second portion of the passage of enlarged cross-section, said first portion being positioned upstream of said second portion when fuel vapour is vented to atmosphere through the passage in use of the fuel tank cap, said second portion having a restricted opening at its end remoted from said first portion to form a second abutment surface, and a valve body having an annular sealing surface engaging said first abutment surface under the action of a first relatively strong helical spring extending co-axially of the valve body and extending between said second abutment surface and an annular third abutment on the valve body to resist pressure exerted from inside the fuel tank, the valve body having a substantially cylindrical axial bore restricted, at the end remote from said sealing surface, by a ball loosely accommodated in said bore, and a second helical spring weaker than said first

helical spring and acting between the ball and an annular fourth abutment surface on the valve body at the end thereof adjacent said sealing surface to resist atmospheric pressure exerted by ambient air on said tank cap, the peripheral wall of said valve body being formed by two coaxial cylindrical portions of different diameters which produce said third abutment surface, of annular form, where they meet, said sealing surface being arranged at the end of the portion having the larger diameter and being formed of a rounded surface of an annular gasket of elastomeric material of non-circular cross-section, the end of the valve body adjacent said sealing surface having an enlarged opening which opens into said axial bore and into which is inserted an insert having a central opening defining in part the axial bore of the valve body, the said central opening being stepped to form said fourth abutment surface, a portion of the insert having a peripheral outer surface complementary to the inner surface of the said enlarged opening but of slightly greater diameter, the insert and/or the part of the valve body into which the insert is inserted, being made of resilient material so that the insert can be inserted into the said enlarged opening by spring action.

4,280,530

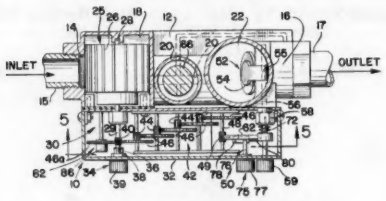
WATER-FLOW-CONTROL DEVICE

Kon H. Yi, 22941 Aspan St., El Toro, Calif. 92630

Filed Jan. 7, 1980, Ser. No. 109,809

Int. Cl.³ F16K *31/48*

U.S. Cl. 137—624.11 **4 Claims**



1. A water-control device adapted for use in water systems wherein the volume of water flow and the timing of the flow is required, said device comprising:

a housing having an inlet port and an outlet port;

an inlet chamber communicating with said inlet port;

an outlet chamber communicating with said outlet port;

an interconnecting flow passage interposed between said inlet chamber and said outlet chamber;

means for controlling the volume of water passing between said inlet chamber and said outlet chamber;

drive means within said inlet chamber operated by the water flow through said inlet port;

a gear-train system operably connected to the drive means;

a valve means operably mounted within said outlet chamber;

a valve-timing means operably interposed between said valve means and said gear-train system, wherein said valve-timing means comprises a gear member adapted to be disengageable from said gear-train system for setting the length of time between an opened or closed position of the valve means;

and wherein said valve means comprises:

a valve seat interposed between said outlet chamber and said outlet port;

a valve member hingedly mounted within said outlet chamber;

a shaft connected to said valve member and extending outwardly from said housing, said timing means being affixed to said valve shaft so as to rotate therewith; and

a spring biasing means mounted to said shaft to bias said valve member and said timing means in counter-clockwise rotation;

means for releasing water pressure against said valve means when in a closed position, said release means being positioned in said interconnecting flow passage;

a diverter passage adapted to selectively communicate between said interconnecting passage and the downstream side of said valve means;

said gear member of said timing means being formed in a crescent shape, and being flexibly attached to said valve shaft by a flexible arm member and a flexible leaf spring;

and wherein means is provided for releasing said crescent-shaped gear member from engagement with a gear of said gear-train system, whereby said valve member can be returned to a closed position.

4,280,531

METHOD AND APPARATUS FOR HYDRAULICALLY CONTROLLING SUBSEA WELL EQUIPMENT

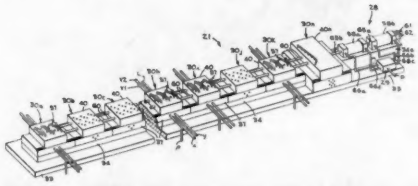
Lionel J. Milberger, and Albert R. Tucker, both of Spring, Tex., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 23,933, Mar. 26, 1979, which is a division of Ser. No. 873,323, Jan. 30, 1978, Pat. No. 4,185,541. This application May 13, 1980, Ser. No. 149,408

Claims priority, application United Kingdom, Feb. 26, 1977, 8216/77

Int. Cl.³ F15B *18/00*

U.S. Cl. 137—624.11 **17 Claims**



1. A fluid control valve comprising:

a valve block having a plurality of inlet/outlet ports, a plurality of internal valve ports and a plurality of passageways interconnecting each of said internal valve ports with a corresponding one of said inlet/outlet ports;

a jumper block having a plurality of jumper ports, a plurality of internal block ports, and a plurality of passageways interconnecting each of said internal ports with a corresponding one of said jumper ports;

a plurality of programmable jumper lines;

means for connecting the ends of each of said jumper lines to a selected pair of said jumper ports to selectively interconnect said passageways in said jumper block; and

means for mounting said jumper block in sliding contact with said valve block to interconnect said internal valve ports with corresponding ones of said internal block ports.

4,280,532

CONTROL UNIT AND METHOD OF MAKING THE SAME

Harley V. Bible, Maryville, and William T. Moon, Jr., Knoxville, both of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 906,490, May 17, 1978, Pat. No. 4,223,701. This application Mar. 10, 1980, Ser. No. 128,628

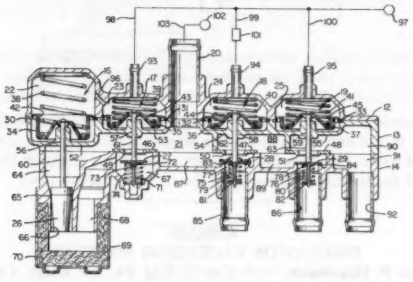
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.³ F16K *27/02*

U.S. Cl. 137—882 **10 Claims**

1. In a control means having a plurality of pneumatically operated valve constructions for controlling the fluid flow from a first fluid source in relation to the condition of a second fluid source that is adapted to be interconnected to said pneumatically operated valve constructions, each valve construction having a flexible diaphragm means interconnected to a

valve member by an actuator stem, the improvement comprising a self-contained housing structure carrying said valve constructions therein in substantially a circular array thereof and having a centrally arranged inlet substantially concentric to said circular array and being adapted to be interconnected to said first fluid source, said housing structure comprising two outboard housing sections and an intermediate housing section secured together in stacked relation, each said diaphragm means being held between said intermediate housing section and one of said outboard housing sections, each said valve member being disposed in the other of said outboard housing



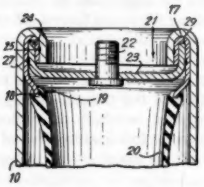
sections, said intermediate housing section having a chamber therein interconnected to said inlet and leading to certain of said valve constructions, said other housing section having a plurality of valve seats respectively controlled by said valve members and having a plurality of outlets respectively associated with said valve seats, at least one of said valve constructions having its said actuator stem passing through its respective valve seat whereby said valve seat of said one valve construction is intermediate said valve member thereof and said diaphragm means thereof, said valve member of said one valve construction being movable on its respective actuator stem.

4,280,533

LOW PRESSURE, LOW COST ACCUMULATOR

A. A. Jacobellis, Woodland Hills, Calif., assignor to Greer Hydraulics, Incorporated, Chatsworth, Calif.

Filed Nov. 13, 1979, Ser. No. 93,041
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **4 Claims**



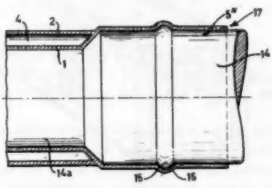
1. An accumulator device comprising a generally cylindrical pressure vessel including a closed end and an open end, an oil port formed in said closed end, a bladder subassembly mounted in said vessel, said bladder subassembly including an axially elongated cylindrical mounting skirt member having a bladder fixedly secured to one end thereof, a cap including an end wall disposed within said skirt and a cylindrical side wall extending away from said one end, said side wall being weldingly connected to said skirt along a first annular weld line spaced from said one end of said skirt, said weld line defining a seal between said side wall of said cap and said skirt, a gas charging port formed in said end wall of said cap, a second annular weld line connection formed between said skirt and said vessel at a position intermediate said first weld line and said open end of said vessel, said second weld line connection defining a seal between said skirt and said vessel whereby said bladder divides said vessel into two chambers communicating, respectively, with said oil and said gas ports and said bladder and cap are dependably secured to said vessel.

4,280,534

PLASTICS PIPES HAVING WALLS WITH LENGTHWISE EXTENDING CHANNELS

Jan P. van Dongeren, Bergentheim, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Continuation of Ser. No. 728,117, Sep. 30, 1976, abandoned. This application May 9, 1978, Ser. No. 904,218
Claims priority, application Netherlands, Oct. 3, 1975, 7511693
Int. Cl.³ F16L *9/12, 9/18*
U.S. Cl. 138—109 **2 Claims**



1. A plastic pipe comprising:

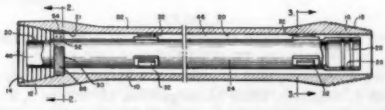
an inner wall and an outer wall, said walls being interconnected by connecting partitions forming substantially rounded channels extending substantially entirely lengthwise of said pipe, at least one end of said pipe having a conical channel closing wall formed by a diverging straight-line conical portion of said inner wall directed toward and integrally formed with the outer wall adjacent said pipe end and generally cylindrical socket means, being integrally formed with said walls and extending for a distance beyond said pipe end, for receiving internally therein a mating end of another pipe, said inner and outer walls, and said partitions all being integrally formed together in one piece from plastic material.

4,280,535

INNER TUBE ASSEMBLY FOR DUAL CONDUIT DRILL PIPE

Clyde A. Willis, Wichita Falls, Tex., assignor to Walker-Neer Mfg. Co., Inc., Wichita Falls, Tex.

Continuation of Ser. No. 872,335, Jan. 25, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 79,228
Int. Cl.³ F16L *9/18*
U.S. Cl. 138—112 **34 Claims**



1. In a dual conduit drill pipe section adapted for connection to a drill bit, said drill pipe section including an outer tube, an inner tube disposed within the outer tube, and means for securing the inner tube to the outer tube, the improvement comprising:

a plurality of base members secured to the inner tube in a spaced relationship;

a plurality of bearing members, each bearing member se-

cured to one of the plurality of base members and disposed between the inner tube and the outer tube, each bearing member defining a bearing surface having a hardness less than that of the outer tube and is positioned to contact the outer tube to provide low friction contact between the inner and outer tubes and thereby to reduce the friction associated with the movement of the inner tube with respect to the outer tube.

4,280,536

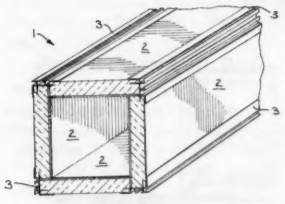
CONNECTING DEVICE FOR INSULATED DUCT WORK

Erich Gnant, 745 Janacek Dr., Waukesha, Wis. 53186

Continuation-in-part of Ser. No. 927,861, Aug. 23, 1978, abandoned. This application May 9, 1979, Ser. No. 37,416

Int. Cl.³ F16L *59/02*

U.S. Cl. 138—149 **1 Claim**



1. An insulating duct comprising:

a first sheet of fibrous insulating material having a first substantially smooth end surface;

a second sheet of fibrous insulating material and having a second substantially smooth end surface; and

a connector engaging said first and second sheets and joining said first and second sheets at a substantially right angle, said connector comprising:

a base extending substantially the entire length of insulating material;

a first sheet engaging means integrally connected to said base and comprising:

a first guide flange disposed in engagement with the outer surface of said first sheet; and

a first penetrating flange parallel to and spaced from said first guide flange and having a sharpened edge embedded within the first end surface of said first sheet, said first penetrating flange extending substantially the entire length of said base; and

a second sheet engaging means connected to said base and comprising;

a second guide flange disposed in engagement with the outer surface of said second sheet; and

a second penetrating flange parallel to and spaced from said second guide flange and having a sharpened edge embedded within the second end surface of said second sheet, said second penetrating flange extending substantially the entire length of said base.

4,280,537

APPARATUS FOR GRIPPING A RUNNING WEFT THREAD ON TRAVELLING-WAVE LOOMS

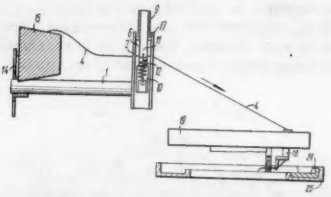
Eduard A. Onikov, ulitsa Panferova, 5 korpus 2, kv. 106; Alexandr L. Galperin, ulitsa Moldogulovoi, 10, korpus 3, kv. 166; Albert S. Serebryannikov, ulitsa Krasikova, 11, kv. 63; Alexandr A. Zabotin, Belyaevo-Bogorodskoe, kvartal 45, korpus 26, kv. 87, all of Moscow, and Evgeny D. Loschilin, Domodedovo, Kashirskoe shosse, 36, kv. 87, Moskovskaya oblast, all of U.S.S.R.

Filed Aug. 29, 1979, Ser. No. 70,790

Int. Cl.³ D03D *47/35*

U.S. Cl. 139—436 **5 Claims**

1. An apparatus for gripping a running weft thread on a travelling-wave loom, comprising; a rotatable disk, a tire arranged on the periphery of said disk; a gripping block partially embracing said tire and forming, together with said tire, an element for braking a weft thread as said weft thread is biased to the gripping block by said rotatable disk, said tire being



fabricated from a material with a coefficient of friction against the thread exceeding that of the material of the gripping block; and means for adjusting the angle of lap of the gripping block and tire to enable changing of the thread gripping time.

4,280,538

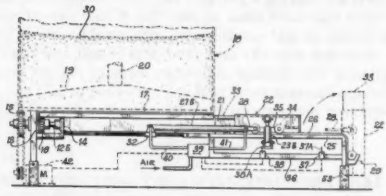
INSULATION PACKAGING MACHINE

Dale P. Hazelbaker, 9030 Carroll Way #6, San Diego, Calif. 92121

Filed Jun. 22, 1979, Ser. No. 50,986

Int. Cl.³ B65B *1/12*

U.S. Cl. 141—73 **3 Claims**



1. A machine for packaging loose-fill material into bags, comprising a trough adapted to receive fill material from a storage tank, said trough enclosing dual overlapping counter rotating helical motor driven augers, a portion of said trough being closed on four sides and having an open outlet end such as a bag may be placed over said portion such that as fill material is transported by the augers into the enclosed portion of the trough the bag will be filled and forced off the trough by the transported volume of fill material, and including a pair of guide rails and a roller carriage free to move along said rails, said roller carriage supporting a can adapted to fit over the bag and enclosed portion of the trough, carriage and can being movable from a position in which the bottom of said can is adjacent said open outlet to a position free of said trough as it is filled and forced off the trough by the transported volume of fill material.

4,280,539

TREE PROCESSING APPARATUS

Paul H. Whitcomb, Woodstock, Canada, assignor to Eaton Corporation, Cleveland, Ohio

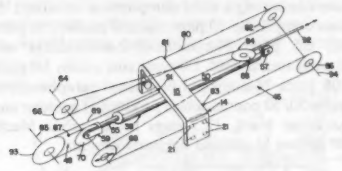
Filed Jan. 17, 1980, Ser. No. 112,769

Int. Cl.³ B27L *1/00*

U.S. Cl. 144—2 Z **4 Claims**

1. In apparatus for harvesting trees comprising an elongated hollow boom assembly, a processing head movable along said boom assembly and operable to delimb trees positioned adjacent said boom and substantially parallel thereto, and actuator means including linearly movable means within said boom assembly operable to move said processing head along said

boom assembly, the improvement wherein said boom assembly comprises a first upper channel member oriented with its legs extending downward, a second lower channel member oriented with its legs extending upward, and third and fourth



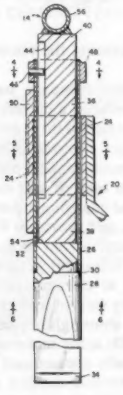
channel members received between said first and second channel members with their legs extending inwardly toward one another and attached to the legs of said first and second channel members to define a substantially cruciform section.

4,280,540

LOG SPLITTER

G. B. Kirby Meacham, 47 Black Rock Rd., Cohasset, Mass. 02025

Filed Jan. 31, 1979, Ser. No. 7,954
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 C **14 Claims**



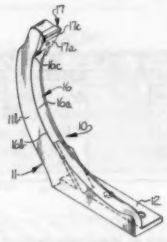
1. A log splitter comprising in combination a wedge having an upper part comprising a driving head and a lower part comprising a tapered blade, a support supporting the wedge with its driving head uppermost for vertical reciprocal movement, a hammer bar, guide means extending upwardly from the driving head of the wedge within which the hammer bar is supported in vertical alignment with the driving head for movement therein relative to the driving head on the one hand to be raised away from the driving head and on the other hand to be impelled into engagement with the driving head and means comprising handlebars fixed to the upper end of the hammer bar at opposite sides thereof for lifting the hammer bar away from the driving head and impelling it into engagement with the driving head.

4,280,541

DEBARKING TOOL FOR LOG DEBARKING MACHINES

Marion W. Reimler, Charlotte; James L. Reimler, Matthews, both of N.C., and John S. Reimler, St. Simons Island, Ga., assignors to Reimler Associates, Inc., Indian Trail, N.C.

Filed Jan. 10, 1980, Ser. No. 110,914
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—208 E **10 Claims**



8. A debarking tool for a debarking machine of the type having a rotatable ring rotor through which logs are longitudinally fed forwardly during debarking thereof, said tool comprising

an elongate arcuate body of generally rectangular cross-section having a rear side surface and also having opposing ends and an arcuate concave inner surface extending between said opposing ends and adapted to face generally inwardly toward the rotational axis of the ring rotor,

mounting means on one end of said arcuate body and adapted for rotatably supporting the debarking tool on the ring rotor on an axis radially outwardly of and extending generally parallel to the rotational axis of the ring rotor, the other end of said body being a free end,

a cutter member mounted on said free end of said arcuate body and having a cutting edge thereon adapted for engaging a log for debarking the same,

an elongate substantially sharp rear climbing edge extending between said opposing ends of said arcuate body for at least a substantial portion of the distance therebetween, said climbing edge also projecting rearwardly from said rear side surface of said body and along said arcuate concave inner surface of said body for defining a substantially sharp log engaging climbing edge thereon for engagement by successive logs being fed forwardly for quickly deflecting the debarking tool substantially out of the path of the logs during rotation of the tool with the ring rotor and thereby serving to protectively shield the debarking tool from impact blows by the leading ends of the successive logs, and

said climbing edge having one end terminating closely adjacent said cutter member and defining a terminal corner portion projecting rearwardly of said cutter member for protectively shielding said cutter member from wear and impact by the leading ends of successive logs and preventing the leading ends of the logs from engaging the cutter member.

4,280,542

CUTTERHEAD FOR A PORTABLE POWER PLANER

Lorenzo E. Alessio, Cairoli, and Giuseppe Cuneo, Lorentuis, both of Italy, assignors to Black & Decker Inc., Newark, Del.

Filed Oct. 3, 1979, Ser. No. 73,767
Claims priority, application Italy, Sep. 8, 1978, 27473 A/78
Int. Cl.³ B27C *1/02;* **B27G** *13/04*
U.S. Cl. 144—230 **14 Claims**

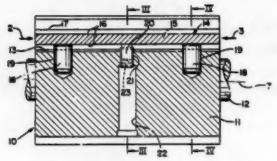
1. A cutterhead for a portable power planer comprising:

a cylindrical body having a substantially cylindrical surface and defining a longitudinal axis;

seat means formed in said body and extending in a direction

parallel to said axis so as to define a longitudinal aperture in said surface likewise parallel to said axis;

a cutting member defining a longitudinal axis and having two channels formed therein, said channels being oppositely disposed and defined by releived portions in the outer periphery of said cutting member, said channels extending parallel to said longitudinal axis, said cutting member having outer surfaces between said channels and being releasably insertable in said seat means, one of said



channels defining at least two cutting edges and the other of said channels angularly positioning said cutting member to selectively cause one of said cutting edges to project beyond said cylindrical surface; and

angular positioning means projecting into said seat means and engaging in said other channel for angularly fixing said cutting member so that the selected cutting edge penetrates said aperture at a predetermined angle of elevation with respect to said surface.

4,280,543

PNEUMATIC TIRES

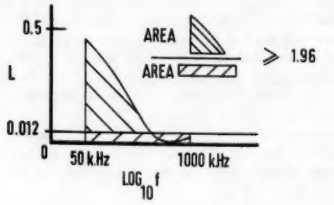
Robert Bond, Lichfield, and Arthur R. Williams, Birmingham, both of England, assignors to Dunlop Limited, London, England

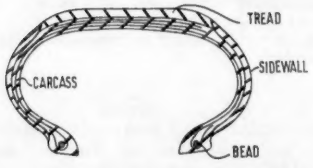
Filed Mar. 8, 1977, Ser. No. 775,472

Claims priority, application United Kingdom, Mar. 12, 1976, 9935/76; Jul. 23, 1976, 30745/76

Int. Cl.³ B60C *1/00*; **C08L** *7/00, 9/00*

U.S. Cl. 152—209 R **2 Claims**





1. A pneumatic tire having a tread, sidewalls and beads for seating on a rigid wheel rim; at least part of the tread of said tire comprising a cured compound having a loss factor less than or equal to 0.35 when deformed cyclically in the frequency range 1.5–150 Hz at a temperature of 24° C. and under a strain of 1%, whilst when deformed cyclically in the frequency range 50 kHz–1000 kHz at a temperature of 100° C. and deformation levels of 10 to 100×10^{-3} mm and taking a graph of loss factor against $\log_{10}$ of the frequency, the area of the graph between these frequency limits above the line loss factor=0.012 divided by the total area below the line loss factor=0.012 is greater than or equal to 1.96.

2. A pneumatic tire having a tread composition cured at 135° C. for 50 minutes comprising 50 parts natural rubber, 50 parts polyisobutylene, 0.5 parts N-cyclohexyl-2-benzthiazyl sulphenamide, 1.0 parts stearic acid, 5.0 parts zinc oxide, 5.0 parts mineral oil, 0.08 parts N-isopropyl-N'-phenyl-paraphenylene diamine, 0.85 parts 50/50 condensation product of acetone and diphenylamine/carbon black, 12.5 parts N110 carbon black, 37.5 parts N660 carbon black, and 2.5 parts sulphur.

4,280,544

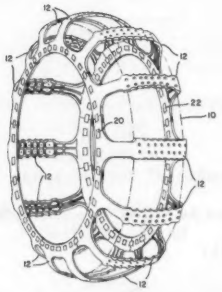
TIRE TRACTION DEVICE

Fred C. White, Renton, Wash., assignor to B R International, Tempe, Ariz.

Filed Mar. 14, 1980, Ser. No. 130,583

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—221 **7 Claims**



1. A device for increasing the traction of a tire on a road surface, comprising:

a plurality of traction members having generally planar inner and outer surfaces, a plurality of spacedly arranged suction cavities formed in the inner surface and a plurality of spacedly arranged recesses formed in the outer surface of each traction member, and a plurality of apertures, one extending between each of said suction cavities and said recesses in the road engaging outer surface of each of said traction members, said apertures having a smaller diameter than the diameter of said recesses; and

fastening means for releasably securing said traction members to said tire at circumferentially spaced locations along the periphery thereof with the inner surfaces of said traction members abutting the periphery of said tire such that as said tire rolls along said road surface, said traction members sequentially contact said road surface with said tire sealing said suction cavities and said road surface sealing said apertures to create and maintain a suction within said suction cavities which is broken as said traction member lifts away from said road surface.

4,280,545

WIRE ROPE TRACTION DEVICE FOR TIRES

Rene J. Martinelli, Tigard, Oreg., assignor to Burns Bros., Portland, Oreg.

Filed Jan. 15, 1979, Ser. No. 3,273

Int. Cl.³ B60C *27/00*

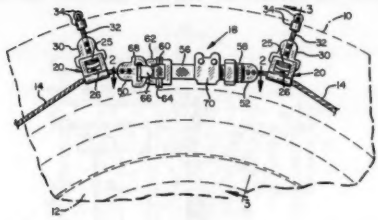
U.S. Cl. 152—222 **22 Claims**

1. In a traction device for attachment to a tire mounted on a wheel, including a pair of lateral cables for positioning circumferentially about the sidewall of said tire and a plurality of cross cables extending over the sole of said tire between said

lateral cables, a plurality of joints between said lateral cables and said cross cables, each such joint comprising:

a lateral cable securing member attached to a said lateral cable, said securing member being substantially flat for positioning against the sidewall of said tire,

and a cross cable end connector member joined to an end of a said cross cable, said connector member also being



substantially flat for positioning against the sidewall of said tire,

one of said members having a tongue and the other member having an aperture in a flat side thereof through which said tongue extends to provide an articulated connection,

wherein said one member forms a substantially closed loop comprising first and second flat sides extending to said tongue.

4,280,546

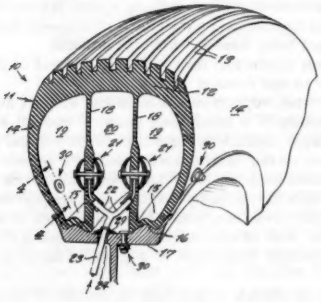
MULTI-ANNULAR CHAMBER, TUBELESS SAFETY TIRE

Victor S. Mistretta, 4703 Eleventh Ave., Brooklyn, N.Y. 11219

Continuation of Ser. No. 928,444, Jul. 27, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,212

Int. Cl.³ B60C *11/14*

U.S. Cl. 152—330 RF **2 Claims**



1. A super-safety inflatable, tubeless tire for automotive vehicles comprising in combination, a circular casing of resilient material, and being fitted around an outer periphery of a wheel, said casing being of generally U-shaped cross sectional configuration by including an outer peripheral facing and opposite side walls, grooved treads around an outer side of said facing, a closed air chamber adjacent an inner side of each said side walls respectively defined and enclosed by means of said side walls, a portion of said outer peripheral facing, a pair of spaced apart parallel radial partitions extending from said outer facing and axially directed inner walls inwardly extending from a radially inward edge of each said side wall to a respective one of said partitions, each said inner wall being around an outer periphery of said wheel, the space between said partitions being closed by said wheel outer periphery so as to form an intermediate air chamber, all three said air chambers extending circularly around said wheel; an inner intake valve mounted on each of said partitions, each said air intake valve communicating with both said air chambers on each side of said partition, both said air intake valves being connected to branch lines of a common tubing which extends outwardly of said tire interior for attachment at its outer end to an air pump whereby all of said chambers can be simultaneously filled through a common input.

4,280,547

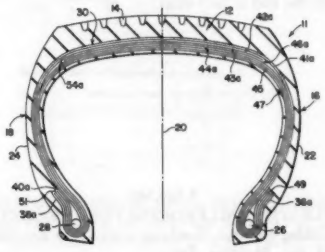
TIRE HAVING A FOLDED FABRIC REINFORCEMENT MEMBER AND A METHOD OF BUILDING SAME

Herbert O. Gilmore, Negley, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, OhioIO

Filed Jan. 9, 1980, Ser. No. 110,530

Int. Cl.³ B60C *9/04, 9/18;* **B29H** *17/20*

U.S. Cl. 152—354 R **25 Claims**



1. A tire for a vehicle comprising a first and a second bead, a crown portion extending circumferentially of the tire, the mid-circumferential plane of the tire dividing the tire into a first side and a second side, a first sidewall and a second sidewall on said first and second sides respectively extending from said crown portion in a direction toward the rotational axis of the tire to said first and second beads respectively and a single folded fabric reinforcement member extending circumferentially of the tire to provide a plurality of reinforcing layers; a first one of said reinforcing layers for reinforcing the sidewalls and crown portion extending from said first bead to said second bead in a path uninterrupted by folds where said reinforcement member is redirected into overlapping relation with said first reinforcing layer to provide a second one of said reinforcing layers; said second reinforcing layer extending from said second bead into said first side of the tire to provide reinforcement for the crown portion of the tire.

4,280,548

FURNITURE SUCH AS CHAIRS AND COUCHES

Manfred Brokmann, Silcherstr.5; Kurt Sanders, Friedrichstr.29; Dieter Sanders, Haneschweg 2, and Hermann Westhoff, Augustenburgerstr. 85a, all of Osnabrück, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,503

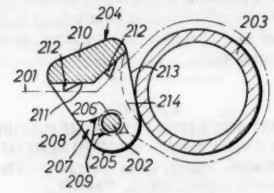
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742842; Dec. 9, 1977, 2754872; May 8, 1978, 2820012

Int. Cl.³ A47H *13/00*

U.S. Cl. 160—383 **16 Claims**

1. A filament strip support for furniture intended to be sat, lain or reclined on, comprising an array of filaments which extends in one longitudinal direction, thereby to form a filament strip support construction, attachment means for securing said filaments at their free ends to a frame of a piece of furniture, each of said filaments being in the form of a flat strip, and each of said filaments being connectable to a part of said frame by passing an end of said strip around said frame part to form a frame encircling loop, and securing said end to the strip itself by means of a securing member adapted to grasp said strip and constituting one of said attachment means, said secur-

ing member is in the form of a clasp to be placed astride the said strip, said attachment means further includes a separate



transverse locking member, said clasp having a pair of arms for holding the ends of said locking member, the latter being secured to the end of said strip.

4,280,549

APPARATUS AND PROCESS FOR DIE-CASTING

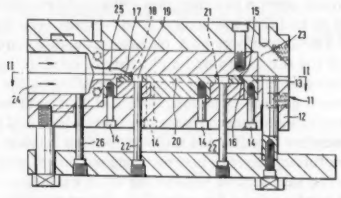
Stephen Gibbs, Nielston, Scotland, assignor to Keystone International, Inc., Houston, Tex.

Filed Apr. 6, 1979, Ser. No. 27,886

Claims priority, application United Kingdom, Apr. 8, 1978, 13876/78

Int. Cl.³ B22D *17/22*

U.S. Cl. 164—113 **14 Claims**



1. Die-casting apparatus comprising a fixed die member and a movable die member rotatable relative to said fixed die member which together define a circular casting cavity having a substantially helical formation on at least one radial periphery and expulsion means disposed to move into and through said cavity for ejecting a formed casting having said helical formation thereon from the cavity in a direction substantially parallel to the cavity axis, expulsion of said casting resulting in relative rotational movement between the fixed die member and movable die member.

9. A process for die-casting comprising bringing a fixed die member and a movable die member rotatable relative to said fixed die member together to define a circular casting cavity having a substantially helical formation on at least one radial periphery;

injecting a molding material into said cavity thereby forming a casting having said helical formation thereon; and

moving an expulsion means into and through said cavity for expelling the casting from the die in a direction substantially parallel to the cavity axis whereby expulsion of the casting from the die results in relative rotational movement between the fixed die member and movable die member.

4,280,550

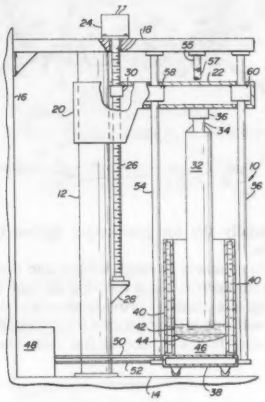
ELECTROSLAG REMELTING FURNACE WITH IMPROVED POWER CONNECTION

Raymond J. Roberts, West Berlin, N.J., assignor to Consarc Corporation, Rancocas, N.J.

Filed Feb. 11, 1980, Ser. No. 120,226

Int. Cl.³ B22D *23/06, 27/02;* **H05B** *3/60*

U.S. Cl. 164—252 **8 Claims**



1. A power connection for an electroslag remelting furnace, said electroslag remelting furnace comprising a crucible supported upon an electrically conductive base,

a vertically adjustable electrode support means for supporting one or more electrodes within said crucible for forming an ingot therein,

a plurality of individual rigid conductors spaced around the periphery of the crucible and base, and extending vertically from said base to said electrode support means,

said individual conductors defining a vertical coaxial configuration for eliminating the effects of magnetic fields upon an ingot being formed within the crucible,

and power conductors for connecting a source of electrical power to said furnace,

said electrode support means including contact means for maintaining it in continuous electrical contact with said individual conductors regardless of its vertical position relative to the base whereby electrical power may be conducted from said individual conductors to one or more electrodes supported by said electrode support means,

one of said power conductors being connected to said base and the other of said power conductors being connected to individual conductors at a position adjacent to said base,

whereby an electric circuit may be defined by said power conductor connected to said individual conductors, said electrode support, the one or more electrodes supported thereon, a slag and molten metal pool contained within said crucible, any ingot formed within said crucible, said base, and the one of said power conductors which is connected to said base.

4,280,551

CENTRIFUGAL CASTING APPARATUS FOR DENTISTRY

Isao Ohara, 24-4, Midorigaoka 4-chome, Toyonaka, Osaka, Japan

Filed Aug. 9, 1979, Ser. No. 65,102

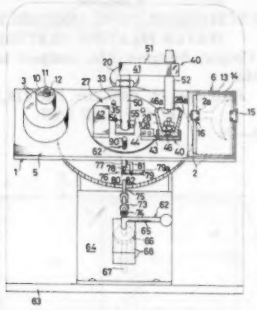
Claims priority, application Japan, Aug. 11, 1978, 53-98470

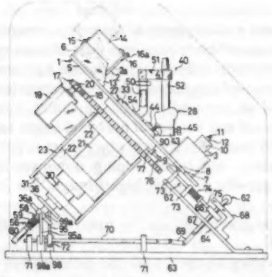
Int. Cl.³ B22D *13/06, 13/10*

U.S. Cl. 164—287 **8 Claims**

1. A centrifugal casting apparatus for dentistry comprising: a

rotatable platform means provided with a major surface and adapted for rotation about an axis normal to said major surface defining the center of rotation of said platform means, said platform means being provided with a cutout portion defining a through hole at the center of rotation; a mold mounted on said major surface radially spaced from said center of rotation; a driving mechanism associated with said platform means for rotating said platform means; a rotating member having an upper surface and an axis of rotation normal to said upper surface and coincident with said axis defining said center of





rotation; a crucible mounted on said upper surface and radially displaced from said center of rotation; rotation transmitting means attached to said rotating member and associated with said drive mechanism via said through hole at the center of rotation to transmit rotation of said platform means to said rotating member; means associated with said rotation transmitting means for engaging said rotating member with said rotation transmitting means to impart the rotation of said rotating member after commencement of rotation of said platform means; and means associated with said crucible for melting metal charged into said crucible.

4,280,552

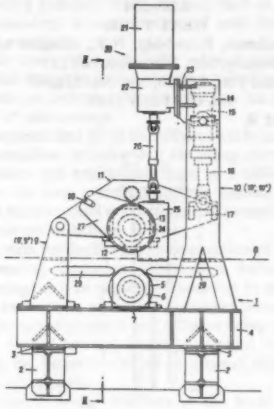
DRIVING ROLL STAND FOR A CONTINUOUS CASTING PLANT

Franz Bayer; Hermann Schubert, both of Linz, and Franz Kagerhuber, Traun, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 19, 1979, Ser. No. 49,909
Claims priority, application Austria, Jun. 23, 1978, 4578/78
Int. Cl.³ B22D *11/128*
U.S. Cl. 164—448 **3 Claims**

1. In a driving roll stand to be used in a continuous casting plant, for example a multi-stand continuous casting plant with strand guideways for billets, of the type including a lower roll and an upper roll arranged one above the other, a rotary drive for driving at least one of said rolls, a base, a support mounted on said base and supporting said lower roll, a lever hinged to said support and supporting said upper roll, and an adjustment drive for pivotably moving said lever, the improvement which is characterized in that,

said support includes an upper part rising above said lever in terms of height,



one end of said adjustment drive is hinged to said upper part of said support and the other end is hinged to said lever, said adjustment drive being a single device and means mounting said device centrally above the axis of said strand guideway, and

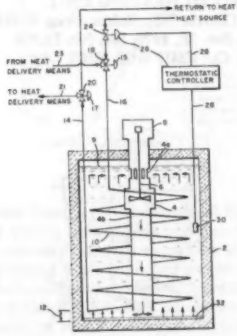
said rotary drive is mounted at said upper part of said support.

4,280,553

SYSTEM AND PROCESS FOR STORING ENERGY

Samuel L. Bean, Jamesville; James W. Swaine, Jr., Manlius, and Paul R. Crawford, Freeville, all of N.Y., assignors to Allied Chemical Corporation, Morris Township Morris County, N.J.

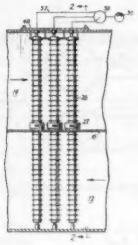
Filed Mar. 16, 1979, Ser. No. 21,282
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—1 **7 Claims**



1. In a process for storing and releasing heat wherein heat is absorbed by a solid hydrated salt stored in a bulk container thereby causing said solid salt to become molten, and thereafter said molten salt is allowed to solidify and heat released from said salt in the solidification step is recovered, the improvement which comprises terminating the input of said heat into said solid salt prior to the complete conversion of said solid salt to the molten state to prevent formation of an undesired lower

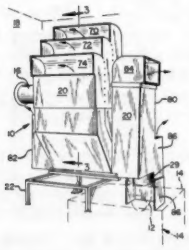
energy solid hydrated salt and thereby to maintain heat storage capacity of said salt substantially unchanged, and internally circulating said mixture of said molten salt and said solid salt within said container during the solidification step thereby preventing stratification and supercooling.

4,280,554
HEAT TUBE
Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Feb. 4, 1980, Ser. No. 118,347
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—11 R **6 Claims**



1. Heat exchange apparatus for the transfer of heat from a hot fluid to a cold fluid including a housing having outer walls enclosing a compartment, an apertured partition plate extending between opposite sides of said housing to divide the compartment into hot and cold fluid passageways, heat pipes extending through each aperture of said partition and substantially across the hot and cold fluid passageways, a volatile liquid contained in said heat pipes, means detachably mounting said heat pipes in the apertures of said partition plate comprising a collar fixed to the partition plate around each aperture therein, a locking collar fixed to each heat pipe adapted to matingly receive the fixed collar on the partition plate to preclude fluid flow therebetween, and means for identifying a heat pipe that fails to effectively transmit heat from the hot to the cold fluid passageways.

4,280,555
HEAT EXCHANGER FOR EXHAUST OUTLET OF A ROOM HEATING UNIT
Leo Cieslak, 1263 Church, NE., Salem, Oreg. 97301
Filed Jun. 25, 1979, Ser. No. 51,404
Int. Cl.³ F24H *9/02;* **F24B** *7/00*
U.S. Cl. 165—47 **13 Claims**

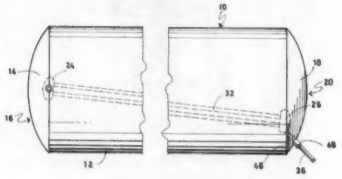


1. A heat exchanger for coupling the exhaust outlet of a heating unit to a chimney and extracting heat from the exhaust gases flowing therethrough, comprising:

conduit means for coupling the exhaust outlet to the chimney including a plurality of vertically spaced rows of horizontally extending tubes and end cap means for coupling adjacent ends of the tubes to form an upwardly progressing serpentine path for the exhaust gases; and

shroud means for directing air past the conduit means including means for separately housing a plurality of vertically spaced clusters of the tubes so that air will flow by convection generally horizontally past the tubes, the shroud means further including means for separately housing the end cap means so that air will flow by convection past the end cap means.

4,280,556
HEAT EXCHANGER-TANK ASSEMBLY FOR HOT WATER HEATING SYSTEM
George H. Cooper, Bridgton, Me., assignor to Suntime, Inc., Belfast, Me.
Filed Jan. 22, 1980, Ser. No. 114,385
Int. Cl.³ F28F *9/00*
U.S. Cl. 165—76 **5 Claims**



1. In a heat exchanger-tank assembly comprising a tank having an elongated body portion, a pair of end caps assembled thereto to close both ends of said body and a preassembled heat exchanger mounted therein, said heat exchanger comprising an inlet manifold at one end thereof, an outlet manifold at the other end thereof and a series of heat exchanger tubes in sealed relation to said manifolds so as to place them in communication with each other, said tubes sloping downwardly to permit drainage by gravity of fluid therethrough, the improvement comprising

a drain tube connected to the lowest point of said outlet manifold

means providing an opening in the outlet end of said tank for said drain tube so located as to receive said tube when said preassembled heat exchanger is bodily inserted through the opposite end of said body portion prior to being closed by the inlet-end end cap

an inlet tube connected to and extending laterally from said inlet manifold and

cooperating means on the inlet-end end cap and adjacent portion of said body portion defining an opening for said inlet tube after heat exchanger assembly has been inserted in said body portion and said end cap has been assembled to said body portion.

4,280,557
SONIC APPARATUS FOR CLEANING WELLS, PIPE STRUCTURES AND THE LIKE
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406
Filed Nov. 13, 1979, Ser. No. 93,505
Int. Cl.³ E21B *37/00, 43/25*
U.S. Cl. 166—177 **8 Claims**

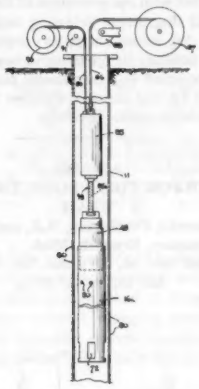
1. Apparatus for cleaning an extended number of apertured portions of the lower regions of an oil well casing sunk in the ground, said casing having a liquid therein comprising

a sonic oscillator,

a stem member in the form of an elongated elastic tube which runs along said extended number of apertured portions, said oscillator being attatched to the top end of said stem member in the region of the apertured portions to be cleaned, said stem member being located within said casing closely spaced to the inner walls thereof for limited

freedom of motion generally normal to the longitudinal axis of said casing, and

means for driving said oscillator in a rotary vibrational mode having quadrature related vibrational force vectors generally normal to the longitudinal axis of said casing and said stem member, said vibrational force components being transferred to said stem member, a portion of the liquid



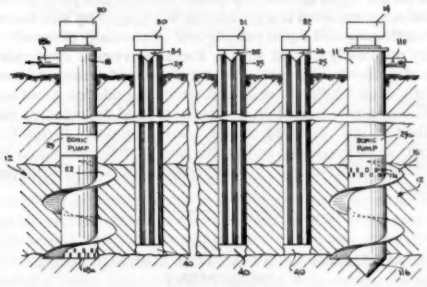
being in the space between said stem member and casing, the vibrational energy in the stem member causing successive pressure and vacuum regions for form in the liquid with a cyclical force pattern which rotates around the inside wall of the casing and dislodges foreign matter from the apertured portions and sweeps away said foreign matter.

4,280,558

SONIC TECHNIQUE AND SYSTEM FOR FACILITATING THE EXTRACTION OF MINERAL MATERIAL

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Nov. 23, 1979, Ser. No. 96,755
Int. Cl.³ E21B *43/25, 43/30*
U.S. Cl. 166—245 **12 Claims**



1. A sonic method for facilitating the extraction of mineral from an earthen formation comprising the steps of

driving a first casing into said formation,

driving a second casing into said formation spaced from said first casing by a predetermined distance,

driving a plurality of piling members into said formation between said casings, said pilings being arranged in a predetermined linear array running in a line from one of said casing to the other and having a predetermined spacing between each other and the casings,

pumping water into one of said casings whereby the water passes from the bottom portion of the casing into the formation,

pumping effluent out of said formation through the other of said casings,

while water is being pumped into one of said casings and effluent out the other, sonically vibrating said casings and said piling members at a frequency such as to set up resonant standing wave vibration of said casings and said piling members,

the sonic energy loosening the mineral from the earthen material along the path defined by the piling members and the casings such that the mineral can be drawn into the other of said casings,

after it appears that all of the effluent has been pumped from the formation, withdrawing the piling members from the formation and reinstalling them in a different array between the two casings and then sonically driving said piling members and said casings and pumping water in and effluent out as before.

11. A system for facilitating the extraction of mineral from a mineral bearing formation, said system including first and second casings driven into said formation in spaced relationship from each other, water being pumped through one of said casings into said formation and effluent being pumped out of the other of said casings, the improvement being means for facilitating the extraction of water-mineral effluent from said formation comprising

a plurality of piling members in the form of corrugated sheets driven into said formation between said casings and arranged in a predetermined array and with a predetermined spacing and

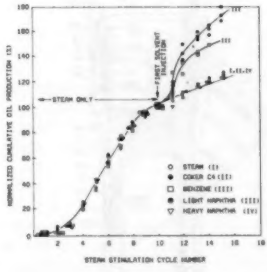
means for sonically driving both of said casings and said piling members at a resonant standing wave frequency.

4,280,559

METHOD FOR PRODUCING HEAVY CRUDE

Donald A. Best, Calgary, Canada, assignor to Exxon Production Research Company, Houston, Tex.

Filed Oct. 29, 1979, Ser. No. 88,905
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—303 **17 Claims**



1. A process for recovering viscous oil from a subterranean deposit of a known temperature penetrated by a well which comprises cyclically injecting steam of a known temperature into and producing fluids from said deposit via said well until a steam chamber of substantial fluid mobility is established in said deposit adjacent to said well, said steam chamber having a residual viscous oil saturation therein, injecting a hydrocarbon solvent into said steam chamber prior to a subsequent steam stimulation cycle sufficient to reduce said residual viscous oil saturation upon conducting said subsequent steam stimulation cycle, said hydrocarbon solvent having a low concentration of low molecular weight paraffinic hydrocarbons and boiling for the most part less than said known steam temperature and for the most part greater than said known deposit temperature, and conducting said subsequent steam stimulation cycle to recover viscous oil from said deposit.

4,280,560
POTASSIUM HYDROXIDE CLAY STABILIZATION PROCESS

R. D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jun. 30, 1980, Ser. No. 164,621
Int. Cl.[3] E21B 43/22
U.S. Cl. 166—305 R 14 Claims

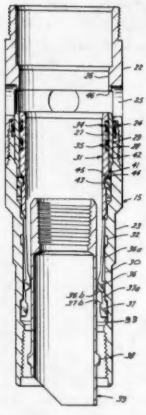
1. A process for stabilizing clays present in a water-sensitive, subterranean sandstone formation, the sandstone formation containing fine particles which interact with aqueous solutions having ionic makeup distinct from connate water to reduce permeability of the formation and fluid flow therethrough, the sandstone formation being penetrated by a well bore in fluid communication therewith, the process comprising:

injecting into said subterranean sandstone formation via said well bore an aqueous solution having potassium hydroxide dissolved therein, said potassium hydroxide existing in said aqueous solution as potassium ions and hydroxide ions, said hydroxide ions interacting with said sandstone formation in the presence of said potassium ions to effectively render said fine particles relatively insensitive to said aqueous solutions having a distinct ionic makeup, and said potassium hydroxide being dissolved in said aqueous solution in a quantity sufficient to effectively render said fine particles relatively insensitive to said aqueous solutions having a distinct ionic makeup for a substantial period of time.

4,280,561
VALVE

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 2, 1979, Ser. No. 53,782
Int. Cl.[3] E21B 43/12
U.S. Cl. 166—332 5 Claims



1. A valve comprising,

a body having a valve seat,

a valve member cooperable with said seat and movable in both directions between open and closed positions to control flow through said valve seat,

spaced internal grooves in the body with their adjacent walls converging outwardly of the groove,

land means in the body intermediate said grooves,

spaced dog means carried by the valve member and resiliently biased to alternately engage one of said spaced grooves and land means and position the valve member alternately in open or closed positions,

said dog means when engaged with said groove expanding to a first selected diameter and when engaged with said land means contracting to a selected lesser second diameter,

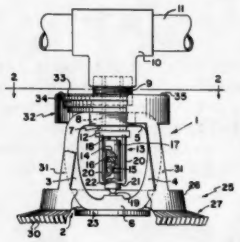
an actuator having a circumferential actuator flange thereon having a radial outer dimension between said first and second selected diameters,

said spaced dog means having confronting shoulders engageable by said flange on said actuator member when a dog is in engagement with said land means to shift the valve member with reciprocation of the actuator member, each of said dog means releasing said actuator member flange as a dog means enters its cooperating groove permitting the actuator flange to move beyond the dog means while the other of said dog means remains retracted for engagement by said actuator member flange when reciprocated in the opposite direction.

4,280,562
DISTRIBUTOR FOR FIRE PROTECTION SPRINKLER HEAD

Hermann R. Glinecke, Pennington, N.J., assignor to Globe Fire Equipment Company, Standish, Mich.

Filed Nov. 14, 1979, Ser. No. 94,106
Int. Cl.[3] A62C 37/12
U.S. Cl. 169—39 14 Claims



1. In a fire protection sprinkler head construction having a frame through a part of which extends a liquid passage, a removable seal for said passage, heat sensitive means normally reacting between said frame and said seal for holding the latter in passage-sealing position but being collapsible in response to a predetermined increase in its temperature to release said seal and permit liquid to flow in a stream through said passage, and a deflector mounted in a position to be engaged by said stream for deflecting said liquid radially and substantially perpendicularly outwardly of said stream, the improvement comprising annular distributing means mounted on said frame independently of said deflector in spaced, encircling relation about said deflector and in a position to intercept liquid deflected by said deflector; and diverting means carried by said distributing means at its periphery and in the path of deflected liquid for diverting such liquid circumferentially of said distributing means.

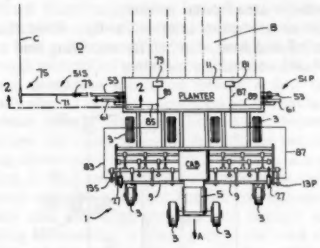
4,280,563
AUXILIARY SHOVELS FOR AGRICULTURAL IMPLEMENT

Arthur F. Crow, Jr., Milford, Ill.

Filed Dec. 4, 1979, Ser. No. 100,033
Int. Cl.[3] A01B 25/00
U.S. Cl. 172—126 11 Claims

1. An agricultural implement adapted to dig and cultivate the ground and plant seeds therein including, in combination, a mobile agricultural implement adapted to traverse the ground, said implement being provided with series of shovels for digging and cultivating the ground, an auxiliary shovel provided at each side of the implement and substantially in line with a series of shovels, each auxiliary shovel being operatively mounted on the implement and movable into down operative

position engaging and digging the ground and to raised inoperative position removed from engagement with the ground, and a ground marker provided at each side of the implement, each of said ground markers being movably to and from operative ground engaging and marking position, means operatively connecting each auxiliary shovel to the ground marker which



is on the same side of the implement and operable to move that auxiliary shovel into inoperative position when that ground marker is in inoperative position and to move that auxiliary shovel into operative ground engaging position when that ground marker is in operative ground engaging position, and the operation of said means being controlled by the operator of the implement.

4,280,564

EARTHWORKING MACHINE

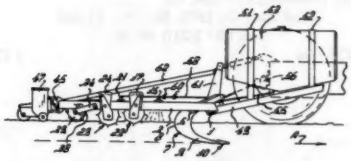
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Aug. 8, 1978, Ser. No. 931,996

Claims priority, application Netherlands, Aug. 15, 1977, 7708955

Int. Cl.³ A01B *29/04*

U.S. Cl. 172—151 **6 Claims**



1. An agricultural machine comprising a frame and a pair of elongated soil working rollers rotatably mounted on said frame one behind the other with respect to the direction of travel of the machine, each roller being rotatable about corresponding horizontal shaft means that defines its axis of rotation and said rollers being interconnected to said frame by respective adjusting means that displaces the roller and its axis of rotation in directions substantially at right angles to said axis of rotation, said adjusting means comprising a pivotable arm member having a lower portion that carries said shaft means, the arm members of the two rollers being pivotable on respective pivot axes located at about the same height as one another, the lower arm portion that carries the shaft means of the leading roller being shorter than the lower arm portion that carries the shaft means of the trailing roller, an upper portion of each arm member comprising setting means that fixes that arm member in any one of a plurality of positions about said pivot axis, the pivot axis of each arm member being located between said shaft means and said setting means, and said rollers being independently displaceable in both vertical and horizontal directions about their respective pivot axes.

4,280,565

SOIL WORKING MACHINE

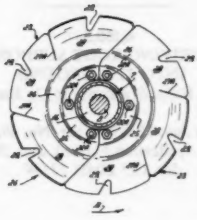
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Jul. 5, 1979, Ser. No. 55,013

Claims priority, application Netherlands, Jul. 5, 1978, 7807270; Jul. 5, 1978, 7807271

Int. Cl.³ A01B *7/00, 9/00, 33/02, 33/10*

U.S. Cl. 172—548 **10 Claims**



1. A soil cultivating machine comprising a frame and rotatable cultivating means journalled on said frame, said cultivating means comprising a plurality of cultivating members mounted on substantially horizontal shaft means that extends transverse to the direction of machine travel, said cultivating members each comprising semicircular working elements that form a substantially closed circle when viewed from the side and said elements being separated from one another, at least in part.

4,280,566

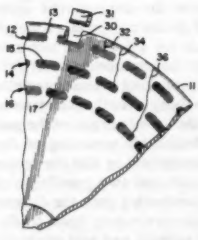
AGRICULTURAL DISK HAVING NON-DIRECTIONAL FRACTURE PROPERTIES

Dale H. Breen, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 16, 1979, Ser. No. 30,194

Int. Cl.³ A01B *23/06*

U.S. Cl. 172—604 **8 Claims**



1. In an agricultural disk made from a straight rolled steel and hardened to a predetermined base hardness level, means for providing non-directional fracture characteristics to the hardened disk, comprising:

a plurality of concentric rows of circumferentially uniformly spaced-apart crack arrester means, the concentric rows arranged progressively radially spaced-apart and radially spaced inwardly from the periphery of the disk, the crack arrester means in each succeeding concentric row arranged in diametrical alignment with each circumferential space between the crack arrester means in each preceeding concentric row, the diametrically aligned and diametrically spaced-apart arrangements of crack arrester means and spaces between the succession of concentric rows of crack arrester means ensuring that in the event of a radial crack developing at the periphery of the disk that the

radial crack cannot propagate through the circumferential and radial spaces between any two crack arrester means of each preceeding concentric row any further than to the ultimate radially inwardly concentric row without encountering at least one of the crack arrester means in the ultimate radially inwardly concentric row and be arrested by that crack arrester means; and

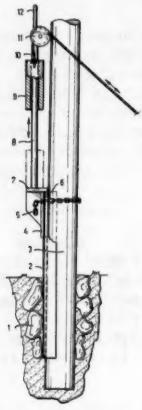
wherein at least three concentric rows of crack arrester means are provided spaced radially inwardly of the periphery of the disk.

4,280,567

DEVICE FOR DRIVING ROOT SUPPORTS OF POLES INTO THE GROUND

Seppo Ijäs, Ulvila, Finland, assignor to Oy Ensio Miettinen AB, Porvoo, Finland

Filed Jun. 15, 1979, Ser. No. 49,051
Claims priority, application Finland, Jun. 28, 1978, 782050
Int. Cl.³ E04H *12/34*
U.S. Cl. 173—129 **2 Claims**



1. A device for driving root supports of poles into the ground, said device comprising a weight producing the impact force, a guide for guiding the movements of the weight, and means for producing movement of the weight back and forth, said means comprising at least one pulley fastened to the guide and a rope passing over the pulley and, at one end, fastened to the weight, the lower portion of the guide being provided with means for detachable mounting of the device onto the root support characterized in that the mounting means comprise a connecting part and two parallel projections placed on one side of this connecting part, the distance between said projections being approximately equal to the thickness of the reinforcing root support and said projections being positioned so that, when the device is mounted on the root support, said projections are placed on different sides of the root support so as to secure the guide in a position substantially parallel to the root support and that the rope for lifting the weight has been arranged as running over the pulley so that the rope leaves the pulley in the direction of the pole.

4,280,568

SIDEWALL SAMPLING APPARATUS

William A. McPhee, and Junius L. Speights, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 1, 1980, Ser. No. 117,751
Int. Cl.³ E21B *25/04, 25/10*
U.S. Cl. 175—4 **3 Claims**

1. A formation core-taking apparatus for obtaining samples of formations traversed by a borehole, comprising:

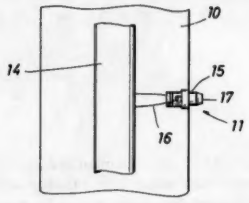
an elongated gun body member for traversing said borehole;

an open-ended tubular core-taking member having a formation penetrating forward end and a truncated circular cross-section rearward end;

a groove traversing partially about the outside circumference of said rearward end of said core-taking member;

a base member having a rearward end carried on said gun body member said base member having an enlarged diameter annular area frontal section;

a circular cross-section internal cavity within the frontal section of said base member for receiving said rearward end of said core-taking member;



means to detachably secure said core-taking member within said base member said means having a roll pin member partially within said internal cavity thereby partially truncating said cavity;

said roll pin member slidably fitting into said groove when said core-taking member is twisted in said base member; and

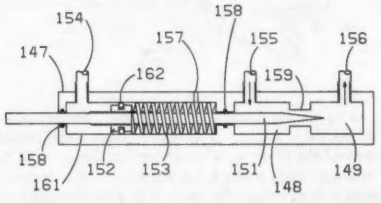
an explosive charge for propelling said base member and said core barrel from said gun body member into said formation.

4,280,569

FLUID FLOW RESTRICTOR VALVE FOR A DRILL HOLE CORING TOOL

Houston B. Mount, II, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 25, 1979, Ser. No. 51,486
Int. Cl.³ E21B *49/06*
U.S. Cl. 175—26 **3 Claims**



3. In a method of drilling into the sidewall of a drill hole penetrating a subterranean formation which comprises positioning at a selected location in the drill hole an apparatus for drilling into the sidewall of a drillhole, wherein said apparatus comprises a support member, a shoe means mounted to said support member for movement toward and away from the sidewall of a drill hole, a hydraulic motor means mounted to said support member for movement toward and away from the sidewall of the drill hole, and a drill bit means connected to the rotor of said hydraulic motor for drilling a hole, and activating said shoe means for wedging said apparatus to said selected locations to said drill hole, followed by activating said hydraulic motor means for rotating said drilling bit and moving said drilling bit means into drilling engagement with the sidewall of a drill hole, followed by retracting said drilling bit means and then said shoe means and removing said apparatus and further

comprising hydraulic drive means for moving the hydraulic motor means toward the sidewall of a drill hole, wherein the improvement comprises;

flowing fluid from said hydraulic drive means through a fluid flow restrictor valve connected in said hydraulic drive means for controlling the movement of said hydraulic motor toward the sidewall of a drill hole, wherein said valve comprises an orifice means in said valve for the flow of fluid therethrough and an orifice restricting means connected in said valve for movement toward and away from said orifice means for restricting the flow of fluid through said orifice means, wherein said orifice restricting means comprises a housing having a first and second axially aligned cylinders separated by an annular shoulder, a piston in said first cylinder movable between a first position and a second position with the second position being closer to said annular shoulder, a spring urging said piston away from said annular shoulder, an orifice in said second cylinder, a slender pointed rod connected to said piston and extending through said annular shoulder in sealing relationship, a bleed port in the wall of said first cylinder between said piston and said annular shoulder, and an inlet on one side of said orifice and an outlet on the other side wherein said fluid for activating said hydraulic drive means for advancing said bit in connected through said inlet and said outlet; and

connecting fluid from said hydraulic motor means to the interior of said first cylinder on the side of said piston opposite said annular shoulder.

4,280,570

DRILL HAMMER

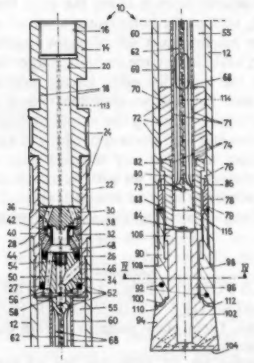
Hans-Philipp Walter, Corneliastrasse 23, D-7107 Bad Wimpfen, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,948

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816737

Int. Cl.³ E21B *4/14*

U.S. Cl. 175—92 **9 Claims**



1. In a drill hammer adapted for connection to a compressed air source, including a top section which has a central passageway and is connected to a cage means which in turn is connected to an outer tube, said cage means supporting a control unit that contains passageways, an axially movable valve and a central spindle tube, said outer tube guiding a main ram as well as an intermediate ram for reciprocating sliding movement along said central spindle tube, said intermediate ram being interposed between said main ram and the upper end of a steel drill member, said outer tube further having at its lower end a radially divided retainer, the inner profile of which is shaped to match the outer profile of said upper end of said steel drill member for transmitting rotary power, said steel drill member being adapted to reciprocate under the force of said intermediate ram and under pressure from said compressed air source and further said drill member comprising a shaft with a main axial bore and a crown, the improvement wherein said cage means has an outer fluted profile for engagement by a tool having a matching inner profile, said control unit comprising three portions of which the lowermost portion is connected to said spindle tube by an inset means that is integral with said lowermost portion which is, via a ring pad, supported by a reentering collar located at the lower end of said cage means.

4,280,571

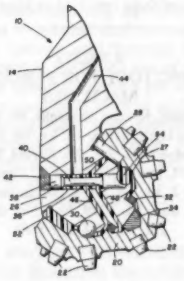
ROCK BIT

Dennis D. Fuller, Duncanville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 24, 1980, Ser. No. 114,919

Int. Cl.³ E21B *10/22*

U.S. Cl. 175—337 **10 Claims**



1. An improved bearing lubrication and seal system for a rock bit including a bit body arranged to be connected in a drill string, an axle portion on said body, a cutting member journaled on said axle portion, a bearing cavity between said axle portion and said cutting member, bearing means disposed in said bearing cavity for supporting the load of the cutting member on said axle portion and pressurized fluid passage means interiorly of said axle means and terminating at said bearing cavity for transmitting bearing conditioning fluid to said bearing means; wherein said improved system comprises:

a lubricant containing plastic material interposed in said cavity and between and in contact with said bearing means and at least partially filling said bearing cavity to continuously lubricate said bearings and blocking said fluid passage means from the transmission of said pressurized fluid through said cavity;

said material having the characteristic of being flexible under bit operating conditions whereby during use of said rock bit said material is gradually expelled from between said cavity and from said bearing means downstream of said bearing means to continuously seal the downstream portion of said cavity while being extruded and whereby expulsion of said material places said cavity in fluid communication with pressure bearing conditioning fluid through said passage means for further conditioning said bearings.

4,280,572

CHISEL FOR A PERCUSSIVE TOOL

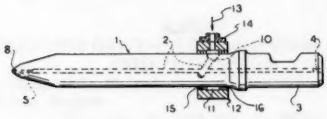
Leo Schmid, and Heinrich Kotyza, both of Salzgitter, Fed. Rep. of Germany, assignors to Salzgitter Maschinen und Anlagen Aktiengesellschaft, Salzgitter, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,671

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810606

Int. Cl.[3] E21B *10/36*

U.S. Cl. 175—417 18 Claims



1. A chisel for a percussive tool, particularly for percussive mining of rock, comprising a body portion having a working region; and at least one nozzle mounted in a chamber of said body portion and operative for forming a high-speed flow of a high-pressure fluid, particularly of a high-pressure liquid, and directing said fluid toward said working region, wherein said body portion has a head section and a shaft section connectable with one another, said chamber being arranged in said head section, and having at least one nozzle hole formed in said head section and communicating with said chamber and with said working region, and said at least one nozzle being arranged for directing the flow of fluid into said at least one nozzle hole.

4,280,573

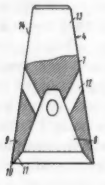
ROCK-BREAKING TOOL FOR PERCUSSIVE-ACTION MACHINES

Boris V. Sudnishnikov, Krasny prospekt, 56, kv. 59; Veniamin V. Kamensky, ulitsa Derzhavina, 19, kv. 78; Eduard P. Varnello, ulitsa Dzerzhinskogo, 3, kv. 19; Sergei K. Tupitsyn, ulitsa Zorge, 123, kv. 31, and Konstantin K. Tupitsyn, Krasny prospekt, 51, korpus 3, kv. 25, all of Novosibirsk, U.S.S.R.

Filed Jun. 13, 1979, Ser. No. 48,252

Int. Cl.[3] E21B *10/48*

U.S. Cl. 175—418 10 Claims



1. A rock breaking tool for use with a self-propelled percussive action boring machine comprising a casing having a rear end portion for attachment to the machine and a hollow forward end portion terminating in a continuous annular cutting edge, said forward end portion including a first internal frusto-conical surface defining said cutting edge, a second internal frusto-conical surface extending rearwardly and inwardly from said first frusto conical surface, said second surface defining an internal rock-collecting chamber and at least one duct in said forward end portion connecting said chamber with the exterior of the casing, said duct having an opening in said second surface and said duct extending outwardly and rearwardly from said opening.

4,280,574

BALANCE WITH SELECTABLE MULTIPLE READING SCALES

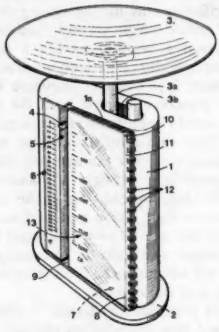
Paul Terraillon, Le Mont Gosse, Monnetier-Mornex, France

Filed Oct. 26, 1979, Ser. No. 88,525

Claims priority, application Switzerland, Nov. 9, 1978, 11535/78

Int. Cl.[3] G01G *23/22, 3/08*

U.S. Cl. 177—41 6 Claims



1. In a balance having a material-receiving pan and an indicator movable along a predetermined path in response to the weight of material placed on said pan, the improvement comprising:

a seat which includes a base portion and a wall portion for supporting a notebook and having an open side through which the notebook may be slidably inserted and removed, a notebook having a plurality of pages, said notebook being insertable into and removable from said seat, said notebook having an edge thereof extending along and adjacent to said predetermined path when the notebook is inserted in said seat, each of said plurality of pages having different indicia thereon along the edge thereof adjacent said path, said pages comprising a set of pages, binding means for binding said set of pages together to form a notebook, said binding means being larger than the seat so that only the notebook edge having said indicia can be inserted into the seat to abut the end wall of the seat thereby properly aligning the notebook together with the base portion and wall portion of the seat, and said binding means being such that any selected page may be positioned outermost of the set with its indicia along said path whereby the notebook may be inserted, aligned and removed without attaching or securing the notebook to the seat.

4,280,575

APPARATUS FOR CUTTING AND METERING SLABS OR BALES OF UNVULCANIZED RUBBER

Gaetano di Rosa, Turin, Italy, assignor to Fata European Group S.p.A., Pianezza, Italy

Filed Jul. 31, 1979, Ser. No. 62,391

Claims priority, application Italy, Aug. 1, 1978, 68833 A/78

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.[3] G01G *13/02*

U.S. Cl. 177—123 5 Claims

1. Apparatus for cutting and metering slabs or bales of unvulcanised rubber to be fed to a rubber mixing machine, said apparatus comprising in combination:

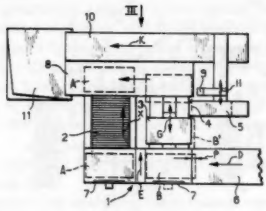
a cutting machine,

a first bale carrier in the form of a single conveyor belt for carrying whole bales of unvulcanised rubber in a predetermined direction of conveyance,

a second bale carrier for removing whole bales from said conveyor belt and being in the form of a carriage movable

to and fro in a direction perpendicular to said predetermined direction in order to feed a said bale to said cutting machine, said carriage also having means for effecting displacement of said bale in equal steps transversely with respect to the cutting machine to enable the cutting of successive slices from said bale,

a first output conveyor positioned downsream of said conveyor belt and arranged to receive whole bales therefrom,



a second output conveyor positioned downstream of the cutting machine and arranged to receive said slices, and

a weighing station arranged to receive rubber off both said output conveyors, the weighing station including an automatic weighing machine controlling the operation of said second output conveyor.

4,280,576

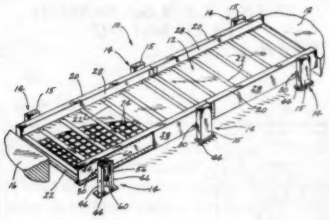
LOW PROFILE TENSION MOUNTED LOAD CELL INDUSTRIAL SCALE

James L. Smith, Jr., 316 W. 12th St., Grand Island, Nebr. 68801

Filed Jul. 9, 1979, Ser. No. 55,886

Int. Cl.³ G01G *19/02*

U.S. Cl. 177—126 **3 Claims**



1. An industrial scale comprising:

a platform for supporting an object to be weighed, said platform including a pair of horizontally disposed parallel beams and a plurality of transverse beams attached to and interconnecting said parallel beams;

a plurality of pairs of retractable clevis structures, each pair of said clevis structures being attached to the opposite ends of one of said transverse beams and extending through the webs of said parallel beams, each of said clevis structures including a cylindrical chamber attached to said transverse beam intermediate the flanges thereof, said chamber having an open end terminating in the vertical plan defined by the outer edges of the flanges of said parallel beam, and an elongated support bar disposed in mating relationship within said chamber, said support bar including a clevis disposed at the outer end thereof, said support bar being moveable between a first retracted position wherein said clevis is disposed within said chamber and a second extended position wherein said clevis is disposed outwardly of the cylindrical chamber and the outer edges of the flanges of said parallel beam;

a plurality of ground engaging platform mounting brackets disposed outwardly from the longitudinal edges of said parallel beams, including:

a ground engaging support base;

a pair of horizontally spaced parallel channel columns extending upwardly from said base normal thereto;

a top channel beam having a central opening formed therein, said top channel beam being attached to and interconnecting said parallel channel columns; and

a pair of parallel elongated support bars attached to the top of said top channel beam at the longitudinal sides thereof and disposed on opposite sides of said central opening, said support bars having semi-circular recesses formed in the upper surface thereof adjacent to said central opening; and,

a plurality of tension mounted load cells attached at the upper end to said platform mounting bracket and attached at the lower end to said clevis when said support bar is in said second extended position, consisting of:

an upper connector including an eye member having an opening and a threaded shaft extending normal to the axis of said opening, said threaded shaft being threadably connected to the upper end of said load cell and extending through and below said central opening in said top channel beam, said eye member opening having a pin of circular cross-section received within and extending beyond both sides of said upper connection, said pin having outer ends contacting and supported by the semi-circular recesses of said support bars, whereby said load cell depends directly downward from the central opening in said top channel beam of said platform mounting brackets; and

a lower connector including an eye member having an opening and a threaded shaft extending normal to the axis of said opening, said threaded shaft being threadably connected to the lower end of said load cell, said eye member opening having a pin received within and extending beyond both sides of said lower connector, said pin having outer ends received within counter opposing openings in said clevis, whereby the entire weight of the platform and object to be weighed is applied to the load cell in tension.

4,280,577

TEMPERATURE-PROTECTED WEIGHING APPARATUS WITH BEARING ENCLOSURE

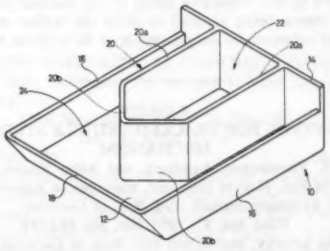
Peter Kunz, Gossau, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed May 21, 1980, Ser. No. 151,981

Claims priority, application Switzerland, Aug. 28, 1979, 7783/79

Int. Cl.³ G01G *21/02, 7/00*

U.S. Cl. 177—179 **6 Claims**



1. Weighing apparatus of the electromagnetic load compensation type, comprising

(a) a housing (**10**);

(b) permanent magnet means (**26**) connected with said housing;

(c) load receiving means (**46**) connected for vertical move-

ment relative to said housing, said load receiving means including a hollow coupling member (**40**) containing a vertical chamber (**40***a*);

(d) electromagnetic load compensation means including a compensation coil (**36**);

(e) means connecting said coil for movement relative to said permanent magnet means in response to vertical displacement of said load receiver means relative to said housing, said connecting means including

(1) a transmission lever (**34**) pivotally connected with said housing for movement about a horizontal pivot axis (**32**), said compensation coil being carried by said transmission lever, said transmission lever including a portion (**34***a*) which extends through a wall opening contained in said coupling member; and

(2) resilient bearing means (**38**) arranged vertically within said chamber for connecting said transmission lever portion with said coupling member.

4,280,578

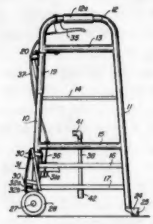
MOTORIZED WALKER FOR THE DISABLED

Jack E. Perkins, Salt Lake City, Utah, assignor to Margaret P. Roberts, Sandy, Utah, a part interest

Filed Feb. 21, 1979, Ser. No. 13,782

Int. Cl.³ B62D *11/04*

U.S. Cl. 180—6.5 **6 Claims**



1. A walker device for the disabled, comprising a pair of sideframes, each of said side frames including front and rear supporting legs, a caster wheel secured to one of said legs, a fixed wheel secured to the other of said legs, means interconnecting said front and rear legs, and handle members mounted on said leg-interconnecting means; means interconnecting said side frames in spaced parallel relationship, whereby a disabled person may walk in the space between said sideframes while being supported by holding said handle members; electrically powered means including independent electric motors for driving said fixed wheels, respectively, to provide powered forward mobility for the device; and independent motor control means associated with the respective handle members for actuation by the respective hands of the disabled person, said power means being adapted to drive the walker device at a speed of substantially only from about 50 to about 80 feet per minute.

4,280,579

CONTROL FOR TRACKED VEHICLE STEERING MECHANISM

Franz X. Zaunberger, Augsburg, and Artur Kugler, Neusass, both of Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk Aktiengesellschaft, Fed. Rep. of Germany

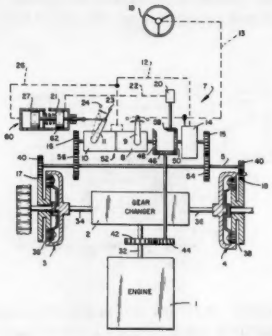
Filed Jan. 17, 1980, Ser. No. 112,910

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2901958

Int. Cl.³ B62D *11/10*

U.S. Cl. 180—6.44 **13 Claims**

1. In a tracked vehicle transmission having planetary gear sets for engagement with chain treads and a steering mechanism including a neutral shaft in engagement with the planetary gear sets, a hydrostatic drive unit comprising a hydrostatic pump and means regulating the hydrostatic pump as a function of a steering direction control, the hydrostatic drive unit further including an oil motor having an absorption control, the oil motor being in driving engagement with the neutral shaft, the improvement comprising an automatic torque control



device, the control device including drive speed indicating means and means for adjusting the oil motor absorption control, the adjusting means being interconnected to the speed indicating means, the adjusting means including means for varying the absorption control as a function of the indicated drive speed.

4,280,580

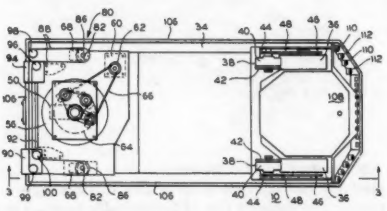
PROXIMITY DETECTOR SYSTEM FOR A MEDICAL DIAGNOSTIC DEVICE

Dennis J. Wojcik, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 3, 1978, Ser. No. 957,531

Int. Cl.³ B60T *7/12*

U.S. Cl. 180—169 **12 Claims**



1. A method for detecting an obstacle to the immediate front of a mobile medical diagnostic device having a front portion comprising the steps of:

generating transmission signals,

in response to said transmission signals, transmitting ultrasonic sound waves from transducers located behind the device front portion to and in advance of the front portion of the device and generating range window signals which correspond both to time intervals at which said sound waves would be reflected from an obstacle at a preselected distance in front of the device and to a predetermined time period corresponding to the distance from the transducers to the device front portion,

receiving any waves that are reflected back to the transducers and converting said reflected waves to reflected signals, and

processing said reflected signals and said range window

signals to determine whether an obstacle is within said preselected distance from the front of the device.

2. An obstacle detector system for a mobile medical diagnostic device having a front portion, comprising:

means for generating transmission signals,

means responsive to said transmission signals for transmitting ultrasonic waves from transducers located behind the device front portion to and in advance of the front portion of the device,

means for generating range window signals in response to said transmission signals, said range window signals corresponding both to time intervals at which said sound waves would be reflected from an obstacle at a predetermined distance in front of the device and to a predetermined time interval at which said sound waves would be reflected back to the transducers from the front portion of the device,

means for receiving any waves which are reflected back to the device, and

circuitry means for analyzing the reflected waves and, with the use of the range window signals, determining if an obstacle is to the immediate front of the device.

4,280,581

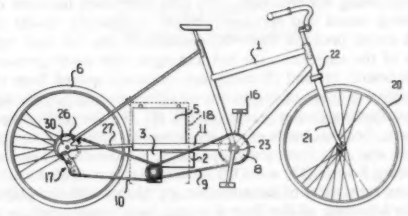
MOTOR AND PEDAL DRIVEN BICYCLES

Lawrence A. Rudwick, 3200 Glenwood Pl., Falls Church, Va. 22041

Filed May 12, 1978, Ser. No. 905,531

Int. Cl.³ B60K *1/00;* **B62K** *11/04;* **B62M** *7/06*

U.S. Cl. 180—207 **13 Claims**



1. An electrically powered bicycle having a frame member including a generally conventional arrangement and dimensioning of a head tube, a front fork depending downward from the head tube, a bottom bracket for rotatably supporting a chain wheel with pedals coupled to the chain wheel, a seat support and frame members extending at least between the bottom bracket and the seat support and the bottom bracket and the head tube,

a generally horizontal chain stay,

a rear wheel,

means for rotably supporting said rear wheel from said chain stay,

an elongated generally horizontal frame member extending between said bottom bracket and said chain stay,

a battery,

means for supporting said battery on said elongated frame member,

an electric motor,

means for supporting said electric motor on said elongated frame member,

a drive shaft,

a first sprocket disposed about said drive shaft,

means for driving said drive shaft from said electric motor,

means for driving said rear wheel from said first sprocket, and

means for driving said first sprocket only from said drive shaft, only from said pedals and concurrently from both said drive shaft and said pedals.

4,280,582

VEHICLE FRAME ARRANGEMENT IN MOTORIZED TWO-WHEELED VEHICLE

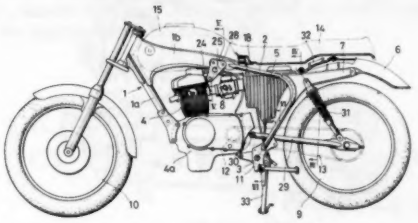
Mikihiro Kouyama, and Katsunori Funabashi, both of Kawagoe, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 844,263, Oct. 21, 1977. This application Jun. 22, 1979, Ser. No. 51,518

Claims priority, application Japan, Nov. 1, 1976, 51-145788; Nov. 4, 1976, 51-147217

Int. Cl.³ B60H *3/06*

U.S. Cl. 180—219 **1 Claim**



1. In a motorized two-wheeled vehicle, the combination including:

a main frame providing a support for an internal combustion engine of said vehicle;

shaft means rigidly secured to said main frame at a lower portion thereof and which extends outwardly of said main frame in both lateral directions;

a pair of subsidiary tubes respectively rigidly attached at one of their ends to opposite sides of the main frame member at an upper portion thereof, and which extend outwardly of the main frame and then rearwardly of the main frame and then in a downward direction, the other of the ends of the subsidiary tubes being rigidly attached to said shaft means at positions spaced outwardly of said main frame;

an air cleaner casing positioned between the rearwardly extending portions of the subsidiary tubes and rigidly attached thereto, said casing having an opening in an upper side thereof;

a cover detachably attached to the outer periphery of said casing and which is defined by an upper half portion and a lower half portion formed as a unit, the upper half portion having an air intake opening on its upper surface in communication with atmosphere, and the lower half portion having an air cleaner element detachably carried on the bottom surface thereof; and

a rear fender integral with said casing and having a front wall constituted by a rear wall of said casing.

4,280,583

AUTOMATIC DIFFERENTIAL CONTROL APPARATUS

Robert W. Stieg, Bethlehem, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Nov. 24, 1978, Ser. No. 963,284

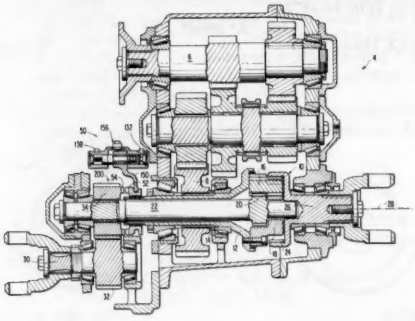
Int. Cl.³ B60K *17/34*

U.S. Cl. 180—250 **25 Claims**

1. In a multiple-drive axle vehicle having a power train with center differential drive means disposed between front and rear axles, separate front and rear fluid braking conduits, a source of fluid pressure connected to said braking conduits, and a bidirectional, three-position clutch having a first engaged position for locking out differential action between front and rear axles, intermediate overrun position adapted for "fast front" axle operation in one rotational direction plus locking out differential spinout in the opposite relative rotational direction, and completely disengaged position for eliminating excessive power transmission between front and rear axles during vehicle braking, the improvement which comprises:

a bidirectional fluid motor mounted adjacent and operatively connected to said three-position clutch;

means responsive to front-axle braking of said vehicle for applying a fluid pressure in a first direction to said fluid motor to transfer the clutch to the completely disengaged position at a predetermined deceleration to permit free center differential operation during high deceleration braking;



said fluid motor being inoperative in said first direction upon loss of normal front-axle braking to provide emergency front axle braking through the drive train;

manual switch means for selectively applying fluid pressure in a second direction to move the bidirectional fluid motor opposite the first direction, thereby moving the clutch into the first engaged position; and

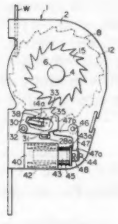
spring means for returning the fluid motor to an intermediate position and return the clutch to the overrun position when no fluid pressure is applied to said fluid motor.

4,280,584

EMERGENCY LOCKING RETRACTOR

Yoshihiro Makishima, Yokohama, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,957
Claims priority, application Japan, Jul. 10, 1978, 53-93920[U]
Int. Cl.³ A62B *35/00*
U.S. Cl. 180—268 **7 Claims**



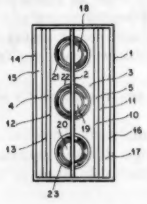
1. An emergency locking retractor for use in a vehicle comprising a webbing take-up shaft biased in a webbing take-up direction, a lock member having an engaging position with respect to said shaft for preventing rotation of the shaft in a webbing draw-out direction and a disengaged position allowing rotation of the shaft in the webbing draw-out direction, a speed-change sensing member, a first drive member connected between said sensing member and said lock member for moving said lock member between said positions responsive to speed-change induced changes in the condition of said sensing member, a second drive member associated with said lock member for moving said lock member from the disengaged position to the engaging position independently of said first drive member and switch-actuated electrical means for operating said second drive member.

4,280,585

MULTI-SOUND SPEAKER SYSTEM

Motoyoshi Nakanishi, 4-11-13 Honcho, Funabashi-shi 273, Japan

Filed Feb. 28, 1980, Ser. No. 125,452
Claims priority, application Japan, Aug. 27, 1979, 54-108118
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—147 **2 Claims**



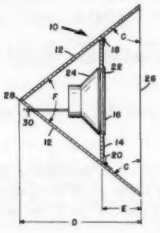
1. A multiple sound-opening speaker enclosure (1), consisting of left-side sound pressure guide board (4) with sound pressure guiding surfaces (12) and (13), and right-side sound pressure guide board (5) with sound pressure guiding surfaces (10) and (11), fixed to left and right edges of baffle board (3); with a plurality of speaker-units mounted centrally thereto and electrically connected to receive an input signal, a left-right sound pressure dividing board (2) fixed between baffle board (3) and the interior back surface of the enclosure; with suitable air-tightening material (18), (19), (20) interposed between the dividing board and speaker-units, to completely divide the back sound pressure from the speakers to the left and right sides of the enclosure, the left and right side sound pressure guide boards (4) and (5) being appropriately spaced from the respective interior of the enclosure (1) so that, in conjunction with reflecting corner pieces (6), (7), (8), (9), the emitted back pressure from each side of the speaker-units is directed toward the left and right front sound openings, sound volume and tone adjusting boards (15) and (17) are adjustably mounted on the left and right sides of the enclosure by hinges (14) and (16) to enable adjusting of the front directed back sound pressure to effectively combine with the sound radiated from the front side of the speaker-units to provide excellent sound reproduction in an efficient manner.

4,280,586

SPEAKER ENCLOSURE

Ted W. Petersen, 2565 Offutt Rd., Woodstock, Md. 21163

Continuation of Ser. No. 904,280, May 9, 1978, abandoned. This application Feb. 1, 1980, Ser. No. 117,423
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—150 **3 Claims**



1. In a sound system, a speaker enclosure comprising:
a hollow pyramidal shell, said hollow pyramidal shell being

formed by four face members, each said face member being triangular in configuration, each said face member having equal length bases, and each having equal length sides, said face members being so arranged so that the base of said pyramidal shell is a square and the apex of each said triangular face member meet at the common apex of said hollow pyramidal shell; and

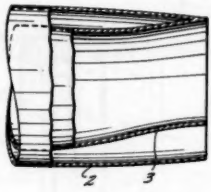
a mounting panel, said mounting panel being within said hollow pyramidal shell, at least one speaker affixed on said mounting panel, said mounting panel being suitably connected to the interior faces of said hollow pyramidal shell, said hollow pyramidal shell and said mounting panel enclosing said speaker, said mounting panel being affixed within said hollow pyramidal shell at a distance from the base of said hollow pyramidal shell equal to one-third the vertical height of said hollow pyramidal shell.

4,280,587

NOISE-SUPPRESSING JET ENGINE NOZZLES AND METHOD

Waman V. Bhat, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 8, 1979, Ser. No. 37,381
Int. Cl.³ F02K 1/34
U.S. Cl. 181—213 **29 Claims**



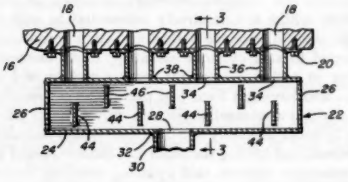
28. The method of reducing the noise perceived at a desired location speed from a jet engine including a discharge nozzle having a generally planar discharge end without any substantial turbulence-promoting fore-and-aft extending notch which comprises promoting substantially more rapid mixing of the portion of the discharge gas flow of such engine at its side generally remote from such desired location than at its side closer to such desired location.

4,280,588

ANTI-POLLUTION MANIFOLD FOR I.C.E.

John V. Veldhuizen, 25975 SW. 182nd Ave., Homestead, Fla. 33030

Filed Sep. 26, 1979, Ser. No. 79,308
Int. Cl.³ F01N 7/10
U.S. Cl. 181—240 **8 Claims**



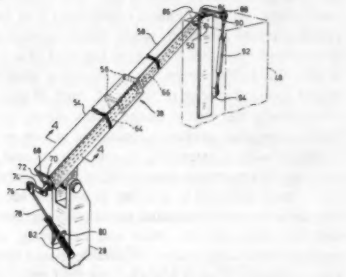
1. A combined anti-pollution exhaust manifold and primary muffler for a multi-exhaust port equipped internal combustion engine, said manifold including an elongated hollow body closed at its opposite ends and constructed of high heat resistant metal, said manifold including a single exhaust gas outlet opening outwardly of one side of said body centrally intermediate its opposite ends and in a direction extending along a path substantially normal to and intersecting the longitudinal center axis of said body, a plurality of straight, short, tubular exhaust gas inlet stubs opening outwardly of the side of said body opposite said one side and spaced therealong from said closed ends and on opposite sides of a transverse plane centered relative to said outlet, said stubs including outer inlet end mounting flange portions supported therefrom similarly inclined generally 20° relative to a plane generally normal to said stubs, the effective length of said stubs being generally equal to the width thereof, and exhaust gas pressure pulse bisecting partial transverse baffles in said body spaced from said one side and said opposite side and at least generally aligned with the ends of said stubs opening into said body, said baffles each being generally plate-like in configuration and disposed generally normal to the longitudinal extent of said body.

4,280,589

ELEVATING DEVICE

John A. Merrick, P.O. Box 569, Limassol, Cyprus, Canada

Filed Jan. 31, 1980, Ser. No. 117,155
Int. Cl.³ B66F 11/04
U.S. Cl. 182—2 **9 Claims**



1. An elevating device comprising

base means;

a telescoping arm means pivotally connected at one end to the said base means and having a man-carrying platform pivotally pendulously suspended at the other end so as to remain in a vertical attitude under the action of gravity, during movement thereof;

motor means operatively connected between the base means and the telescoping arm means to elevate and lower the platform relative to the base means;

second motor means operatively connected between the telescoping parts of the telescoping arm means to extend and contact it for corresponding movement of the platform;

a telescoping torque transmitting shaft disposed alongside the telescoping arm means and telescopable therewith;

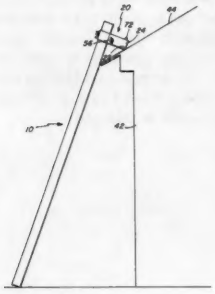
a first link means connecting one end of the telescoping shaft and the base means for rotation of the shaft through an angle corresponding to the pivoting of the second arm means relative to the base means; and

a second link means connecting the other end of the telescoping shaft and the platform and movable by said rotation of the shaft to maintain the platform in its said vertical attitude.

4,280,590
STABILIZING ATTACHMENT FOR LADDERS

Louis M. Polizzi, West Palm Beach, Fla., assignor to Polizzi Enterprises, West Palm Beach, Fla.

Filed May 29, 1980, Ser. No. 154,279
Int. Cl.[3] E06C 7/48
U.S. Cl. 182—214 10 Claims



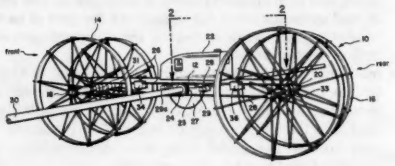
1. A stabilizing attachment for a ladder having first and second side rails of substantially rectangular cross-section joined at intervals by rungs, wherein first respective sides of said rails face outwardly away from each other, second respective sides of said rails face inwardly toward each other, third respective sides of said rails face to a first side of said ladder, and fourth respective sides of said rails face to a second side of said ladder, said attachment comprising first and second elongated brackets intended, when fitted respectively to said first and second side rails, to engage the roof of a structure against which the ladder leans for preventing displacement of the ladder along the edge of the roof, each of said brackets being substantially the mirror image of the other, each bracket having an elongated portion terminating at one end in a generally U-shaped clamp extending to one side of said elongated portion, said clamp being contoured to fit around the third side of one of said rails and to overlap in part the second side of said one rail when said elongated portion lies against the first side of said one rail with its other end extending away from said second side of said ladder, adjustable means fitted to said elongated portion of each bracket near said other end thereof, for engaging said fourth side of the rail to which said bracket is attached, and resilient means connected between said elongated portions in the region of said other ends extending away from said second side of said ladder and pulling said extending portions toward each other when said brackets are fitted to said side rails for holding said clamps tightly against said respective second sides of said rails, said brackets being slidable along said rails when fitted to said rails for adjusting the position of said attachment along said ladder.

4,280,591
WHEEL LINE CHAIN LUBRICATOR

Ross G. Newcomb, Rte. 5, Rupert, Id. 83350

Filed Jun. 29, 1979, Ser. No. 53,354
Int. Cl.[3] F16N 7/24; B05B 3/00
U.S. Cl. 184—17 10 Claims

1. An apparatus for lubricating a continuous chain comprising a reservoir for holding a preselected amount of a lubricating fluid, said reservoir having a front wall, a rear wall, a bottom wall and two side walls, a stationary axle carried within said reservoir and fixed to said sidewalls at a centrally located point, a sprocket wheel loosely carried on said axle to permit rotation and slidable lateral movement thereon, said sprocket wheel having teeth and means on said teeth for carrying a lubricating quantity of a lubricating fluid upward from said

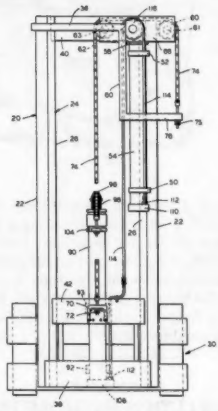


reservoir during rotation for deposit on a continuous chain passing thereover.

4,280,592
FULL FREE-LIFT UPRIGHT FOR LIFT TRUCK

Richard J. Bartow, Athens, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation-in-part of Ser. No. 202,099, Oct. 30, 1980, which is a continuation of Ser. No. 17,779, Mar. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 842,765, Oct. 17, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,614
Int. Cl.[3] B66B 9/20
U.S. Cl. 187—9 E 10 Claims



1. In an upright structure for lift trucks and the like having a fixed upright section including transversely spaced vertical rails, a sole telescopic upright section including transversely spaced vertical rails mounted for elevation on said fixed section and elevatable load carrier means mounted for elevation on said telescopic section, the improvement comprising a sole asymmetric lift cylinder assembly mounted in the upright structure which is operatively connected to said telescopic upright section, elongated flexible lifting means operatively connected to said cylinder assembly, to an element fixed in relation to said fixed upright section and to said telescopic section and having a fixed end means thereof secured to said fixed element a substantial distance outwardly of one side only of the cylinder assembly in a direction which includes a lateral component and having the other end means thereof secured to said telescopic section, said cylinder assembly together with said flexible lifting means being adapted to elevate said telescopic section relative to said fixed section, the lift cylinder being located a substantial distance toward one lateral side of the upright structure such that it projects at least partially into the area of interference by an adjacent vertical rail with the visibility of the operator from his normal line of sight through said adjacent vertical rail, said normal line of sight being defined when the operator is located in a predetermined designed

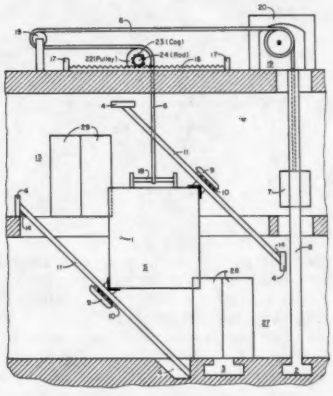
position and attitude for normal operation of the lift truck, and a second cylinder assembly for elevating said load carrier means on said telescopic section independently of the elevation of said telescopic section on said fixed section by said asymmetric cylinder assembly, the operative connection of said asymmetric cylinder assembly to said telescopic section in relation to said fixed and other end means being such that at least approximately balanced lifting force moments act on the upright structure in a transverse plane of the upright at least when a load is carried centrally thereof.

4,280,593

DIAGONAL ELEVATOR

W. Michael Moore, 1135 Duncanwood Dr., Nashville, Tenn. 37204

Filed Jan. 24, 1980, Ser. No. 115,012
Int. Cl.³ B66B 9/06
U.S. Cl. 187—12 **7 Claims**



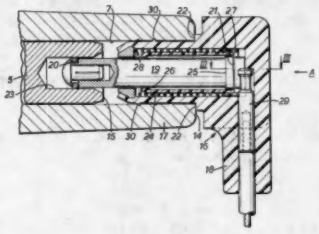
1. An elevator apparatus comprising:
(a) a building structure including at least first and second stations spaced from each other vertically and horizontally,
(b) an elevator car,
(c) inclined guide means extending generally between said first and second stations,
(d) follower means on said elevator car and cooperative with said guide means for guiding the movement of said car between said first and second stations,
(e) a cable member,
(f) means connecting one portion of said cable member to said car,
(g) windlass means for winding and unwinding another portion of said cable member,
(h) track means on said structure extending a distance commensurate with the horizontal spacing of said first and second stations,
(i) traveling pulley means including a pulley engaging said cable member between said connecting means and said windlass means, and rotary traction means cooperative with said track means for causing said traveling pulley means to move along said track means as said cable is wound and unwound, so that said elevator car travels in a diagonal path along said inclined guide means between said first and second stations.

4,280,594

BRAKE WEAR INDICATOR

Heinz W. Baum, Saarbrucken-Dudweiler, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 17, 1979, Ser. No. 58,387
Int. Cl.³ F16D 66/02
U.S. Cl. 188—1 A **7 Claims**



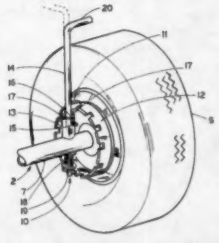
7. A brake wear indicator for indicating the limit of permissible wear of a brake friction lining which is coupled to a first member of a brake mechanism which moves relative to a second member of the brake mechanism as the friction lining wears, the first and second members being members which are not dis-assembled when the friction lining is replaced during service, the indicator having first and second parts and comprising:
a stop defining a first predetermined relative position of the first and second parts with respect to each other;
an indicator device operable to indicate a predetermined amount of movement of the first part relative to the second part from the said first relative position;
means for coupling the first part to the first member; and
means for coupling the second part to the second member, the coupling means being operative during assembly of the brake mechanism to effect said couplings with the first and second parts in their first predetermined relative position with respect to each other, regardless of variations in the relative positions of the first and second members due to manufacturing tolerances.

4,280,595

POSITIVE BRAKE FOR A VEHICLE WHEEL

Rayford W. Timms, St. Louis, and Raymond C. Waidmann, Cedar Hill, both of Mo., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Dec. 26, 1979, Ser. No. 106,465
Int. Cl.³ B60T 1/06
U.S. Cl. 188—31 **8 Claims**



1. A braking arrangement for a vehicle wheel rotatably mounted on the axle of a wheeled vehicle, comprising:
receiver means affixed to the vehicle wheel;
stationary mounting means spaced from said receiver means along the axis of the wheel affixed to one side of the axle;

an operating shaft extending through the axle carried by said mounting means, said mounting means accommodating movement of said shaft along and rotationally about its axis attendant to shifting the brake between respective braking and non-braking positions;

lug means on said shaft extending from the periphery thereof perpendicularly to the axis of the shaft and being engageable with said receiver means to arrest rotation of the wheel upon rotational and axial movement of the shaft into the braking position and disengageable with said receiver means upon rotational and axial movement of the shaft into the non-braking position;

biasing means mounted on the side of the axle opposite said mounting means urging said shaft toward the braking position; and

retaining means releasably securing said shaft in the respective braking and non-braking positions.

4,280,596

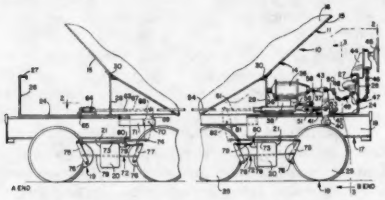
AIR BRAKE ARRANGEMENT FOR CENTER SILL-LESS HOPPER CARS

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 1, 1979, Ser. No. 80,843

Int. Cl.³ B61H *13/00*

U.S. Cl. 188—52 **16 Claims**



1. A car body mounted brake rigging for a railway hopper car having a body with hoppers and side sills extending longitudinally in laterally spaced flanking relation to the hoppers,

said hopper having sloping ends and side sheets for discharging material downwardly unobstructedly between said side sills,

an underframe supporting said body including horizontally spaced stub sills disposed at opposite ends of said hoppers,

horizontal support means on each of said stub sills

wheel trucks including truck bolsters supporting said body, the improvement of the car body mounted brake rigging arrangement unobstructive of the discharge ends of the hoppers, comprising

a brake actuating cylinder supported by one of said support means at one end of said car beneath the sloping end sheet of one of said hoppers,

means on said one support means for actuating said brake actuating cylinder,

a first horizontal floating lever movably mounted on said one support means and including means connected to said actuating cylinder and movable thereby,

said first horizontal lever having opposite ends disposed laterally outwardly on opposite sides of said cylinder,

first and second actuating rods pivotally connected to opposite ends of said first horizontal lever,

said first rod overlying one of said side sills and extending longitudinally, toward the other end of said car alongside said hoppers,

a second horizontal lever pivotally supported on the support means on the other end of said car,

means pivotally connecting one end of said second lever to said first actuating rod, and disposed immediately adjacent said one side sill,

a first vertical lever pivotally supported on said car adjacent one side sill,

a third rod pivotally connected to said second horizontal lever and to said first vertical lever,

a second vertical lever pivotally supported on said car laterally inwardly with respect to said first vertical lever,

pivotal means connecting said second vertical lever to said second rod,

an end brake beam and brake shoe arrangement for each wheel truck supported thereon, and

a first brake lever connecting rod connected to each of said vertical levers and to said end brake beam and brake shoe arrangement.

4,280,597

BRAKE DISC FOR RAILWAY VEHICLES

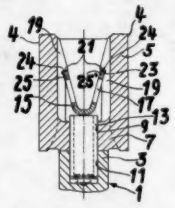
Mathias Schörwerth, Geretsried, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 885,820

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711728

Int. Cl.³ F16D *65/12*

U.S. Cl. 188—218 XL **8 Claims**



1. In a brake disk adapted to be mounted on the axle of a railway vehicle, the combination of a hub, a friction disk annular element mounted concentrically on said hub, a radially extending cylindrical connecting element having an outer end interconnecting said hub and annular element so as to avoid hindering displacement of the annular element in the radial direction due to thermal expansion, means for maintaining said connecting element in interconnecting relationship between said hub and annular element, said maintaining means comprising a removable resilient retaining member immovably positioned between and engaging said connecting element outer end and a stop surface portion of said annular element disposed radially outwardly of said connecting element outer end and directed toward said end, said retaining member being U-shaped and having a bight portion engaging said end and having a pair of substantially straight spring arms extending in the radial direction from said bight portion and engaging said stop surface such that said retaining member can axially resist between said connecting element outer end and said stop surface portion outwardly directed forces so as to prevent radially outward displacement of the connecting element, said retaining member being under an initial tension so as to exert a radially inwardly directed force on said connecting element.

4,280,598

BRAKE DISK

Hans Pöllinger, Munich, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 49,918

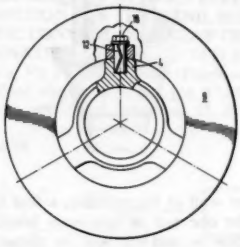
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1979, 2905385

Int. Cl.³ F16D *65/12*

U.S. Cl. 188—218 XL **7 Claims**

1. A brake disk for vehicles comprising a hub, a brake disk annular element mounted on said hub, at least three radially

extending and circumferentially disposed adaptor sleeves seated in radially opposed bores in said hub and annular element, each of said sleeves having one end portion in the hub bore and another end portion in the annular elements bore, means including a bolt passing axially through a said sleeve for positioning axially said sleeves within said bores, and a conical member within one of said end portions of a said sleeve and



engagable by said positioning means such that tightening of said positioning means radially expands said one end portion of said sleeve against the wall surface of its respective bore to fix said one end portion within its bore so that radial expansion is compensated by the relative shifting of the other end portion of the sleeve with respect to one of the hub or annular member of the brake disk.

4,280,599

BRAKE APPARATUS, ESPECIALLY FOR DOOR CLOSERS

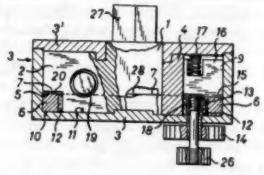
Rosalia Bardfeld, Vienna, Austria, assignor to Anstalt fuer Schliesstechnik, Vaduz, Liechtenstein

Filed Aug. 1, 1979, Ser. No. 62,565

Claims priority, application Switzerland, Aug. 10, 1978, 8505/78

Int. Cl.³ F16F 9/14

U.S. Cl. 188—310 **6 Claims**



1. A brake apparatus, comprising substantially closed housing means, shaft means rotatable in said housing means, a brake medium in said housing means, brake wing means including a cut-out portion, said brake wing means being operatively secured to said shaft means for rotation with said shaft means in said housing means, fixed wall means dividing a space inside said housing means, brake action control ring means including cam surface means operatively located in said housing means for cooperation with said cut-out portion of said brake wing means whereby a gap is formed between the brake wing means and said cam surface means of said control ring means, said gap having a cross-sectional area which varies in its size depending on the position of said brake wing means relative to said cam surface means of said control ring means, thereby controlling the passage of said brake medium through said gap, said control ring means being arranged concentrically relative to said shaft means, and means operatively connected to said control ring means for turning said control ring means in said housing means comprising gear means as part of said control ring means, gear pinion means arranged for meshing cooperation with said gear means, and drive means operatively connected to said gear pinion means, said drive means extending through said housing means, whereby said control ring means are adjustable from outside said housing means.

4,280,600

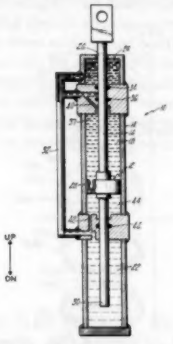
SELF-REFILLING HYDRAULIC ACTUATOR

John K. Salmon, South Windsor, and Dwight Beazley, Newington, both of Conn., assignors to Otis Elevator Company, Hartford, Conn.

Filed Jul. 2, 1979, Ser. No. 54,100

Int. Cl.³ F16F 9/20

U.S. Cl. 188—312 **1 Claim**



1. A hydraulic cylinder characterized by:

a piston;

a piston rod attached to said piston;

a fluid fillable cylinder having a first fluid supply reservoir at one end and a second fluid supply reservoir which is vented to ambient and located above said first reservoir, at a second, opposite end of the cylinder; said reservoirs being in fluid connection with each other, and said piston being slidably disposed in said cylinder, dividing it into two fluid fillable chambers; one of said chambers being in fluid connection with said second reservoir and the other of said chambers being in fluid connection with the first of said reservoirs; and said piston rod extending into said first reservoir for displacing fluid therefrom into the other of said reservoirs, as the piston moves towards said one end.

4,280,601

SHOCK ABSORBER WITH IMPROVED PISTON COMPRESSION VALVE MECHANISM

William G. Patriquin, Mississauga, Canada, assignor to Gabriel of Canada Limited, Toronto, Canada

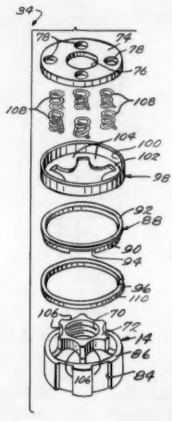
Filed Jun. 21, 1979, Ser. No. 52,128

Int. Cl.³ F16F 9/34

U.S. Cl. 188—316 **9 Claims**

1. In a hydraulic shock absorber adapted to be connected between the sprung and unsprung masses of a vehicle including a tubular member defining a cylindrical chamber, a piston slidably mounted within said cylindrical chamber, a piston rod extending from one side of said piston outwardly from one end of said tubular member, closure means on said one end of said tubular member closing the adjacent end of said tubular member and slidably sealingly engaging said piston rod, end closure means on the opposite end of said tubular member, connecting means for connecting said shock absorber operatively between said masses, hydraulic fluid filling rebound and compression spaces within said cylindrical chamber on the piston rod side of said piston and on the opposite side thereof respectively, said piston having passage means therethrough, rebound valve means disposed in cooperating relation with said passage means to control flow of fluid from said rebound space to said

compression space, a compression valve mechanism carried by said piston for controlling flow of fluid from said compression space to said rebound space peripherally across said piston, and means to accommodate the flow of hydraulic fluid resulting from piston rod displacement, the improvement which comprises said compression valve mechanism including an upwardly facing annular valve seat on said piston, said piston having an annular portion disposed inwardly of said annular valve seat and extending thereabove, said piston rod having a lower end portion of reduced diameter defining a downwardly facing shoulder, a washer member engaging said shoulder, said piston annular portion threadedly engaging the exterior periphery of the lower end portion of said piston rod and maintaining said washer member in engagement with said piston rod shoulder, the exterior periphery of said piston annular



portion including a series of equally annularly spaced radially outwardly facing arcuate surfaces, a series of equally annularly spaced coil springs mounted with their upper ends engaging said washer member and their inner exterior peripheries adjacent a corresponding series of equally spaced arcuate surfaces, a lower spring support including an outer cylindrical peripheral wall disposed in surrounding relation to the outer exterior peripheries of said series of coil springs, an inwardly projecting flange and a series of radially inwardly projecting portions extending toward and corresponding to said arcuate surfaces, an equal annularly spaced series of which are in supported relation to the lower ends of said series of coil springs and an annular seal and carrier assembly between the lower surface of said spring support flange and said upwardly facing valve seat sealingly engaging the interior periphery of said inner tubular member.

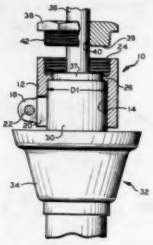
4,280,602

STRUT SUSPENSION REPAIR STRUCTURE

Kenneth D. Kloster, Maumee, Ohio, assignor to Alvey, Inc., St. Louis, Mo.

Filed Oct. 22, 1979, Ser. No. 86,786
Int. Cl.³ F16F 9/54
U.S. Cl. 188—322 **3 Claims**

1. In combination with a cylinder means, a retaining means for retaining a shock absorber therein including a cylinder member having an outer wall and being open at one end, a shock absorber located within said cylinder member with a piston rod slidably extending through said open end, said retaining means including a device attached to said cylinder at said one end and engaging said shock absorber for retaining said shock absorber within the cylinder, said device including a hollow main body having an inner annular wall of a predetermined diameter positioned over said cylinder a top wall attached to one end of said main body and including an aperture receiving said piston rod clamp means for selectively varying the diameter of at least a portion of the inner annular wall of said hollow main body to provide tight frictional engagement



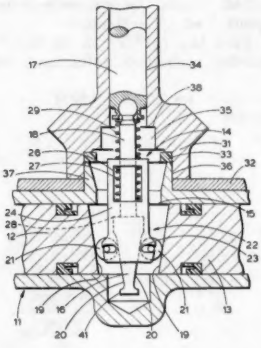
with the outer wall of the cylinder, a first threaded section formed on the one end of said main body, and a second threaded section on said top wall for threaded engagement with said first threaded section on said main body.

4,280,603

BRAKE APPLYING DEVICE

Randhir Kanwar, Leamington Spa, England, assignor to Automotive Products Limited, Warwickshire, England

Filed Aug. 22, 1979, Ser. No. 68,537
Claims priority, application United Kingdom, Sep. 2, 1978, 35422/78
Int. Cl.³ F16D 65/22
U.S. Cl. 188—343 **3 Claims**



1. A brake applying device for an internal shoe drum brake and comprising:

a hydraulic wheel cylinder having a housing with a hydraulic chamber defined therein;

at least one piston located in the wheel cylinder and which can be urged outwardly of the cylinder by hydraulic pressure so as to apply the brakes;

a wedge assembly housed in said chamber and which is movable transversely of the cylinder and which is operable against the piston so as to urge the piston outwardly to apply the brakes, said wedge assembly having;

a wedge;

rollers which act between the wedge and counter surfaces parallel to surfaces on the wedge, at least one of said counter surfaces being on the piston;

a cage which houses the rollers and which is mounted for relative movement along the wedge;

a pair of springs acting in opposition on the cage to determine the unloaded datum position of the cage on the wedge;

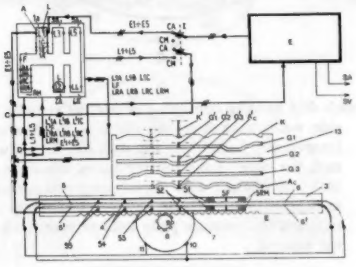
wherein an abutment in the chamber reacts back on the housing so that on retraction of the wedge to release the brakes the cage encounters said abutment and is held thereby in position relative to the housing to compress one of said springs while the wedge continues its retraction.

4,280,604

SERVO-ARRANGEMENT WITH AN ELECTRIC GEAR SHIFT DISPOSITION FOR THE HAND, RESPECTIVELY AUTOMATIC CONTROL OF A GEAR CHANGE, BY ELIMINATION OF THE CLUTCH PEDAL

Rocco Lambicco, Via Napoli, 84, Sora (Frosinone), Italy

Filed May 9, 1979, Ser. No. 37,329
Claims priority, application Italy, Aug. 17, 1978, 50767 A/78
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—0.08 **16 Claims**



1. A servo-arrangement for automatically controlling a transmission including a transmission control selector having a manual override control to provide for automatic or manual selection control, said transmission having at least a gear changing clutch mechanism, three movable gear wheels forming part of said gear changing clutch mechanism and accelleratior control rods, said servo-arrangement comprising:

a rod unit including a rod formed from resistant material and having a rectangular cross-section, said rod unit including on a lower side of said rod a toothed section and on an upper side thereof a rectangular plate, said rectuangular section of said rod having a longitudinal axis parallel to the longitudinal axis of said rod, and the length of said rectangular section being nearly the same length as said rod;

two electrode units extending longitudinally along said rod, said electrode units being coupled to said rod but insulated therefrom, each of said electrode units having a longitudinal slit to divide said electrode units into a pair of electrodes for each said electrode unit on each side of said slit;

the upper edge of said rectangular plate having a surface with a contoured configuration of a predetermined shape, and said plate having four longitudinally extending grooves substantially parallel to the upper edge of said plate, each of said grooves also having a surface with a contoured configuration of a predetermined shape, and said upper surface with contoured configuration being the relative control for said gear changing clutch mechanism, three of said grooves with the contoured configuration surface being the relative control for said movable gear wheels, and the fourth of said four grooves being the relative control for said accelerator rods;

a plurality of sliding bars each having roller means at one end adapted to ride on one of said surfaces of contoured configuration, one of said sliding bars having its said other end connected to said gear changing clutch mechanism bar and being operatively associated through its said roller means with the upper surface of said rectangular plate, three others of said plurality of bars each having its said other end thereof respectively connected with one of said movable gear wheels with its said associated roller means adapted to ride in its respective first, second or third groove, and a fourth other bar having its said other end connected with said accelerator rods and its said one end with its said associated roller means adapted to ride in said fourth groove on its said contoured surface configuration;

an electromotor having a pair of terminals connected to said electrode units and to provide for a polarity reversal for each said pair of electrodes such that the polarity of each said electrode of each said electrode unit is the opposite on opposite sides of said slit, said electromotor including a reduction gear wheel in contact with said toothed section of said rod; and

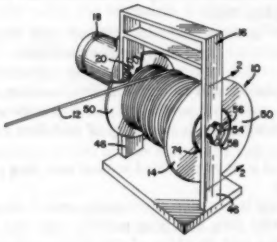
a plurality of electrical contacts fixed relative to said rod, said contacts being placed along one side of said electrode units and being electrically connected therewith and with said controls from said manual control and said automatic control to provide for each one of the gear shift operations of said transmission so that the controls act on said sliding bars and not directly on the items being controlled to change speeds or to change direction from forward motion to reverse motion and vice-versa.

4,280,605

AUTOMATICALLY LOCKING BRAKE ASSEMBLY

George Papadopoulos, Rua Visonte De Piraza, 284 Apt. 701, Ipanama, Rio De Janeiro, Brazil

Filed Aug. 2, 1979, Ser. No. 63,161
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—8 R **14 Claims**



1. A brake assembly comprising:

axial core;

wedge means carried by said core and fixed against rotation relative to said core means but movable axially with respect to said core means;

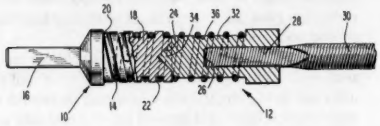
cam means defining a pair of substantially identical cam surfaces axially carried on either side of said wedge means, said cam surfaces being rotatable relative to said core means and to one another;

means for rotating said cam surfaces between a first angularly aligned position where the axial distance between the facing cam plate surfaces is substantially the same at all angular positions, and a second position out of angular alignment, said axial distance in the aligned position being greater than the axial length of said wedge means to permit relative rotation between said cam surfaces and said core means, said axial distance in the unaligned position being less than the axial length of said wedge means to wedge said wedge means between said cam surfaces whereby rotation of said cam surfaces relative to said core means is prevented.

4,280,606
TORQUE LIMITING DEVICE

Kenneth W. J. Taylor, Bletchley, England, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed May 25, 1979, Ser. No. 42,641
Claims priority, application United Kingdom, May 8, 1979, 15776/79
Int. Cl.³ F16D 7/02
U.S. Cl. 192—56 C **4 Claims**



1. A torque limiting device for use with a driving member and a member to be driven thereby, said device comprising

a first coupling member in engagement with said driven member,

a second coupling member in engagement with said driving member,

spring means tightly interengaging said coupling members for urging contact therebetween such that rotation of said second coupling member produces a similar rotation to said first coupling member,

said spring means being so arranged about said coupling members and adapted for use therewith that rotation of said driven member upon increased loading thereof produces an increase in diameter of said spring means to thereby effect disengagement thereof from said second coupling member, said first coupling member including

a male square at one end thereof for engaging said driven member,

a plug at other end of said first coupling member, said plug terminating in a shoulder disposed intermediate said male square and plug, and

a deep helical groove provided around said plug; and wherein said second coupling member includes

a non-circular orifice for receiving a mating part of rotatable means for rotating said second coupling member,

a plug portion, said plug portion disposed in opposed face-to-face relationship with said plug of said first coupling member,

a shallow helical groove provided around said plug portion; and wherein

said spring means is a compression spring seated within said grooves of said plug and plug portion, one end of said spring abutting said shoulder of said first coupling member.

4,280,607
CLUTCH THROW-OUT BEARING PLATE

Tommy J. Blaylock, 2448 NW. 3, Oklahoma City, Okla. 73107

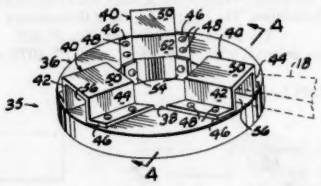
Continuation-in-part of Ser. No. 870,158, Jan. 17, 1978, Pat. No. 4,213,522, and a continuation-in-part of Ser. No. 925,066, Jul. 17, 1976, Pat. No. 4,181,207. This application Nov. 26, 1979, Ser. No. 97,252
Int. Cl.³ F16D 13/71, 23/14
U.S. Cl. 192—98 **1 Claim**

1. In a vehicle clutch assembly having a flywheel and a clutch pressure plate movable toward and away from the flywheel by a plurality of radially inwardly projecting clutch release fingers, a transmission input shaft connecting the clutch pressure plate with a transmission and having a clutch throw-out bearing coaxially mounted on the shaft and movable toward and away from the inwardly directed end portions of said clutch release fingers, the improvement comprising:

a cylindrical centrally bored bearing plate loosely surrounding said input shaft and diametrically substantially equal with respect to said throw-out bearing and interposed between said throw-out bearing and the inwardly directed end portions of said clutch release fingers; and,

socket forming means secured to the surface of said bearing plate opposite said throw-out bearing in circumferentially spaced relation for forming radially open sockets nesting the inwardly directed end portions of said clutch release fingers,

said socket forming means including a plurality of housings,

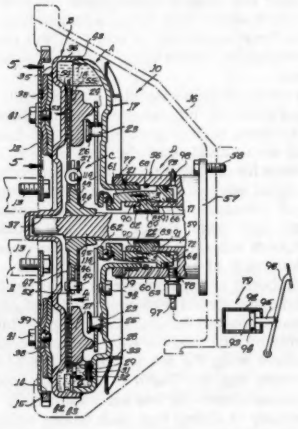


each said housing consisting of parallel radially disposed side walls, normal to the plane of the bearing plate, transversely joined by a top wall and an end wall adjacent the bore of the bearing plate, whereby said end walls, by contact with the adjacent end surface of the respective clutch release finger, substantially coaxially supports the pressure plate with respect to the throw-out bearing.

4,280,608
SELF-CONTAINED BELLEVILLE SPRING-TYPE WET CLUTCH

Edward F. LaBuda, Sterling Heights, and Ting M. Wang, Warren, both of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 860,347, Dec. 14, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,902
Int. Cl.³ F16D 13/72
U.S. Cl. 192—113 B **30 Claims**



1. A self-contained wet clutch assembly adapted to be mounted on a transmission input shaft, comprising a front cover assembly, a rear cover assembly, a clutch plate assembly, and a concentric slave cylinder assembly, said front cover assembly including a front cover having an outer peripheral flange, said rear cover assembly including a rear cover having outer and inner peripheral flanges extending in opposite direc-

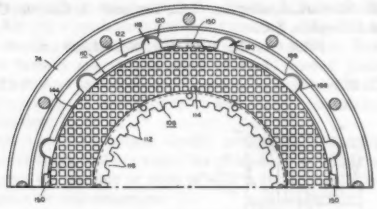
tions, said outer peripheral flanges of the front and rear covers conformably telescoping and seal welded together, said clutch plate assembly being located within the sealed front and rear covers and operatively connected onto said transmission shaft, said slave cylinder assembly rigidly mounted on a transmission housing receiving said transmission input shaft and including a bearing and an oil seal receiving the inner flange of the rear cover to provide a completely sealed assembly.

4,280,609

WET DISC BRAKE OR CLUTCH WITH CURVED STATOR DISC TABS

Phillip D. Cruise, Granger, Ind., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Sep. 7, 1979, Ser. No. 73,338
Int. Cl.³ F16D *13/74*
U.S. Cl. 192—113 B **5 Claims**



1. A multiple disc brake or clutch having an axis and comprising:
- an outer housing member with an inner coaxial cylindrical surface;
- a plurality of axially extending grooves in said cylindrical surface, each of said grooves including a pair of spaced apart margins and having a curved shape between said margins;
- a disc pack located in said housing including a plurality of rotor discs arranged for reversible rotation about said axis and interleaved with a plurality of stator discs;
- said stator discs each having a plurality of tabs around the periphery extending into said grooves respectively, each of said tabs having a curved outer surface;
- a predetermined clearance provided between each tab and its respective groove, said clearance permitting reciprocal movement of said tabs in said grooves as a result of reversals in rotation of said rotor discs;
- means for circulating cooling liquid through said disc pack; and
- each of said tabs contacting one of said margins when said rotor discs are rotating in a first direction to form a chamber between converging outer surfaces of said respective tabs and grooves for trapping foreign matter found in the cooling liquid, said chamber having an opening between the other margin of each of said grooves and said respective tab where the cooling liquid enters and having a tip defined by the contact between said tab and one margin contact where as a result of centrifugal force said foreign matter accumulates and becomes compacted.

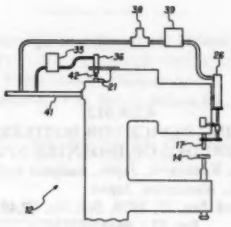
4,280,610

ADJUSTABLE SQUEEZE POINT SAFETY DEVICE

Craig L. Meacham, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 27, 1979, Ser. No. 69,648
Int. Cl.³ B30B *15/22*
U.S. Cl. 192—132 **1 Claim**

1. A saftey accessory for modifying a machine of the type in which closing a main switch actuates a firing solenoid, causing a main drive to move a ram against a workpiece with a high force, the accessory comprising:
- a piston attachable to said machine and having a rod extending parallel to the direction of the motion of said ram, said rod having first and second portions of first and second thicknesses, respectively;
- a crosspiece for rigidly fastening said rod to same ram;
- means, including a closing solenoid, for activating the piston to move said crosspiece and thereby said ram to a position near the workpiece with a low force capable of being opposed by contact with a part of a human body;
- a secondary switch mountable with an actuating arm disposed so that the arm first contacts said first portion of the rod, maintaining the secondary switch open, then the arm becomes in contact with the second rod portion, closing



the switch, when the ram moves within a preselected distance of the workpiece, said secondary switch being connectable in a series arrangement with said firing solenoid, and said series arrangement being connectable in a parallel configuration with said closing solenoid, and said parallel configuration being connectable in series with said main switch and a source of electrical power,
- whereby when the accessory is operative, the main switch can be closed, activating the closing solenoid to move the ram at said low force to a position near the workpiece, whereupon said secondary switch becomes closed, unless the ram is opposed by an obstruction such as a body portion thicker than said preselected distance, the closing of the secondary switch activating said firing solenoid and moving the ram at said high force against the workpiece.

4,280,611

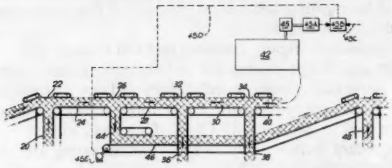
CIGARETTE CONVEYOR SYSTEMS

Desmond W. Molins; Dennis Hinchcliffe; Frank Heybourn, and Raymond G. Coyte, all of Deptford, England, assignors to Molins Limited, London, England

Continuation-in-part of Ser. No. 633,714, Nov. 20, 1975, abandoned. This application Dec. 28, 1977, Ser. No. 865,212
Claims priority, application United Kingdom, Nov. 27, 1974, 51321/74
Int. Cl.³ B65G *1/00*
U.S. Cl. 198—347 **13 Claims**

1. A cigarette making system comprising a number of units each including at least one cigarette making machine, at least one cigarette packing machine, and at least one cigarette reservoir interconnected so that a continuous multi-layer stack of cigarettes is supplied from said making machine to said packing machine and/or said reservoir and from said reservoir to said packing machine within each unit; and conveyor means including transfer conveyor sections which link all of said units in a closed loop path for conveyance of cigarettes as a continuous

multi-layer stack between a cigarette making machine or reservoir in one unit and a cigarette packing machine or reservoir in another unit to control the quantity of cigarettes available in each unit.

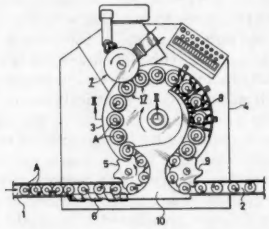


4,280,612

POSITIONING DEVICE FOR BOTTLES HAVING PROTRUDED OR INDENTED SPOTS

Yasuaki Nagano, Kanazawa, Japan, assignor to Shibuya Kogyo Company, Ltd., Kanazawa, Japan

Filed Jun. 27, 1979, Ser. No. 52,493
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—379 **8 Claims**



1. In a positioning device for use with a bottle having a positioning spot on the bottom thereof, said positioning device being adapted for positioning the bottle at a predetermined angular position, the combination comprising:

a transfer table;

mounting means mounted on said transfer table;

a supporting table supported on said mounting means for vertical movement between a first elevated position and a second depressed position, said supporting table having a central opening therethrough and being adapted to support the bottle;

means for preventing rotation of said supporting table relative to said mounting means;

an engaging member disposed in said central opening of said supporting table, means supporting said engaging member for rotation and for vertical upward movement relative to said supporting table, said engaging member having engaging means thereon adapted to extend above the upper surface of said supporting table when said supporting table is in said second depressed position for engaging the positioning spot of the bottle disposed on said supporting table for effecting rotation of the bottle when said engaging member is rotated;

first resilient means cooperable with said supporting table for urging said supporting table toward said first position;

second resilient means cooperable with said engaging member for urging said engaging member upwardly with respect to said mounting means and said supporting table when said supporting table is moved to said second depressed position;

means spaced above said supporting table and cooperable with the top of the bottle disposed on said supporting table for moving the bottle, said supporting table and said engaging member downwardly against the urging of said first and second resilient means so that said engaging means becomes positioned above the upper surface of said supporting table; and

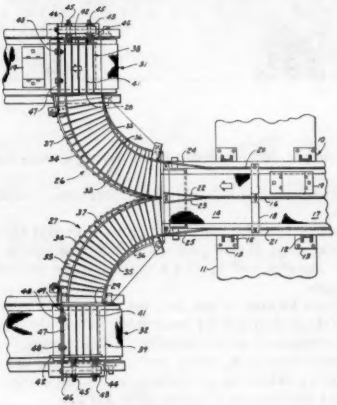
drive means cooperable with said engaging member for effecting rotation of said engaging member relative to said mounting means and said supporting table so that said engaging means is moved into engagement with said positioning spot.

4,280,613

TIE PLATE CONVEYING AND ORIENTATING SYSTEM

John K. Stewart, Lexington, S.C., assignor to Canron Corp., West Columbia, S.C.

Filed Oct. 12, 1979, Ser. No. 84,303
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—406 **7 Claims**

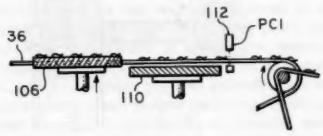


1. For use with a railway track renewal or construction machine adapted to run along said railway track, apparatus for conveying and orientating tie plates for delivery to a mechanism for positioning and laying the tie plates on ties, comprising, in combination: a first longitudinally directed power driven conveyor for serially delivering tie plates from a storage area towards said mechanism, with the rail engaging side of the plates facing upward and the field end of the plates facing forward; a second longitudinally directed power driven conveyor longitudinally and vertically spaced downstream of said first conveyor; a curved conveyor at least partially spanning said longitudinal and vertical spacing arranged to receive tie plates from an end of the first power conveyor and to deliver said plates transverse to said second conveyor; and an intermediate conveyor overlying the inlet end of said second power driven conveyor in line with the exit end of said curved conveyor said intermediate conveyor spanning a portion of the vertical distance between said first and second driven conveyor between said curved conveyor and said second driven conveyor, whereby said tie plates are delivered from said first longitudinally directed power driven conveyor to said cured conveyor onto said intermediate conveyor to said second longitudinally directed power driven conveyor with the field side of said plates facing outwardly.

4,280,614
SYSTEM FOR OFFLOADING ARTICLES FROM A CONVEYOR BELT

James L. Balch; James E. Anderson, and Boleslaus J. Sadeski, all of Madison, Wis., assignors to Oscar Mayer & Company, Inc., Madison, Wis.

Continuation of Ser. No. 848,478, Nov. 4, 1977, which is a continuation of Ser. No. 639,420, Feb. 10, 1975, which is a division of Ser. No. 447,354, Mar. 1, 1974, Pat. No. 3,934,705.
This application Mar. 7, 1979, Ser. No. 18,151
Int. Cl.[3] B65G *47/26*
U.S. Cl. 198—425 5 Claims



1. A product grouping system for dividing a finite number of items having a predetermined serial spacing along a continuously moving unidirectionally driven conveyor into first and second serially spaced groups of first and second predetermined numbers of items, respectively, having said predetermined spacing on said conveyor, said system comprising, in combination:

product detector means fixedly positioned at a reference point along said conveyor for producing an output signal upon the passage of each of said items at said reference point on said conveyor;

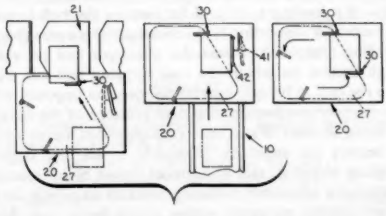
product retardation means fixedly positioned relative to said direction of conveyor movement and responsive to an appied control effect for lifting said second predetermined number of items clear of said conveyor immediately preceding said reference point while maintaining said predetermined spacing between said items; and

control means reponsive to said detector output signal for actuating said product retardation means for a predetermined period of time following the passage of said first predetermined number of items at said reference point to cause said items immediately ahead of said reference point to be separated from said items immediately behind said reference point by the motion of said conveyor to form said first and second groups of items having said predetermined spacing between items.

4,280,615
BUNDLE ENTRY DEVICE

Paul D. Siniscal, Hollis; David L. Hebert, Amherst, and J. Paige Benzing, Milford, all of N.H., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1980, Ser. No. 111,491
Int. Cl.[3] B65G *43/08*
U.S. Cl. 198—470 4 Claims



1. An apparatus for receiving bundles of newspapers from a first conveyor system and for discharging them onto a second conveyor system which is travelling in a direction substantially normal to the direction of the first conveyor, said apparatus comprising:

(a) a supporting structure including a bundle receiving surface located between the first and second conveyors;

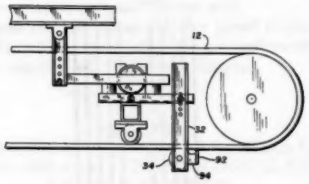
(b) bundle engaging paddles operably connected to driving means including a driven endless member to which said paddles are connected, said paddles being connected to said driven endless member at spaced locations such that the back surface of the paddle which is closest to the second conveyor serves as a stop for a bundle arriving on said receiving surface; and

(c) side guide means which moves to adjust the lateral position of each successive bundle received on said receiving surface so that it can be transferred to the second conveyor by said paddle next following said paddle which acted as a stop for a bundle received in the receiving surface.

4,280,616
VIBRATORY BELT CLEANER WITH AUXILIARY VIBRATORY RESONANCE

Theodore S. Wadensten, P.O. Box 8, Stilson Rd., Wyoming, R.I. 02898

Filed Mar. 8, 1979, Ser. No. 18,589
Int. Cl.[3] B65G *45/00*
U.S. Cl. 198—499 24 Claims



1. A vibratory belt cleaning apparatus for an endless conveyor belt as carried by a conveyor support frame, said apparatus disposed immediately adjacent a discharge pulley to remove attracted particles from the carrying surface of said belt as the belt is vibrated and moved on its return portion of movement, said belt cleaning apparatus including:

(a) a support frame for the conveyor belt and pulley;

(b) a first pair of forwardly extending arm members;

(c) securing means for pivotally retaining said first pair of forwardly extending arm members to a selected and adjustably determined position on said support frame; said first pair of forwardly extending arm members carried by and below said securing means;

(d) a second pair of forwardly extending arms disposed below and substantially parallel to said first pair of forwardly extending arms, this second pair of arms extending toward the discharge pulley;

(e) vibration isolators interposed between said first and second pair of forwardly extending arms, these isolators arranged so as to inhibit vibration transmittal to said support frame;

(f) a variable speed and force vibrator carried on and by a support member secured to the second pair of forwardly extending arm members;

(g) a shaft carried at each end by bearing means secured to the support member and attached to the second pair of extending arms at a point which is intermediate their length, this shaft adapted to accept and support a first free turning roller carried on and by this shaft, this first free turning roller vibrated by the force vibrator and with this first free turning roller disposed to engage the inside surface and under extent of the conveyor belt at a determined position away and downstream from the discharge pulley;

(h) means cooperatively associated with and depending from said second pair of forwardly extending arms and provid-

ing a second vibrated additional cleaning means for said return extent of belt, this second vibrated additional cleaning means adapted to engage the outer surface of the returning belt;

(i) means for adjustably positioning the first freely turning roller so that the engagement with the inside of the conveyor belt and the vibratory actuation is at a maximum resonance and at said position the first pair of forwardly extending arms are permamently secured, and

(j) means for adjustably positioning said second vibrated additional cleaning means so that vibratory actuation with the outside of the returning belt is made with a light engagement therewith, this second vibratory actuation adjustably positioned to determine a maximum resonance and at said position securing said second vibrated additional cleaning means.

4,280,617

CONVEYOR BELT

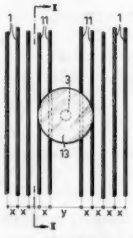
Helmut Zintarra, Hanover, and Olaf Klüpfel, Ahlen-Vorhelm, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,504

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825609

Int. Cl.³ B65G *15/44, 15/34*

U.S. Cl. 198—699 **5 Claims**



1. A conveyor belt, which conveyor belt comprises in combination:

a belt body of elastomeric material, said belt body including at least two groups of continuous reinforcing strands embedded in and extending longitudinally with respect to said belt body, said reinforcing strands being pretensioned and being spaced from and parallel to one another, each group of reinforcing strands being spaced apart a predetermined distance from the adjacent group of reinforcing strands to provide a zone in the belt body free of reinforcing strands, those reinforcing strands of each group positioned adjacent to said zone having a greater elasticity than the reinforcing strands not adjacent said zone, and

means for securing attachments to the belt body, said securing means passing through said zones and extending only over the reinforcing strands of greater elasticity whereby the reinforcing strands of greater elasticity deform relative to the other strands to accomodate the shape of the securing means.

4,280,618

DEVICE FOR HANDLING MEAT LOGS AND OTHER ARTICLES

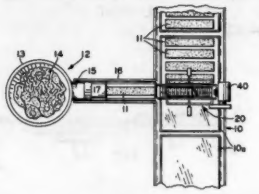
James H. Jensen, Eau Claire, Wis., assignor to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 825,908, Aug. 19, 1977, abandoned. This application May 31, 1979, Ser. No. 44,183

Int. Cl.³ B65G *13/12*

U.S. Cl. 198—782 **4 Claims**

1. A device for handling meat log or like article comprising a main conveyor on which the article may be supported for removal in a forward direction from the device, a frame, a pair of jaws supported by said frame and above said main conveyor, each of said jaws having a series of spaced rollers, said rollers having their tops in a horizontal plane to provide a platform on which said article may be supported, means for driving said rollers on each of said jaws about their axes whereby to propel articles on said platform above and transversely of said main conveyor, and means for moving said jaws apart horizontally while maintaining the tops of said rollers in the same plane to



permit said article to drop between the jaws onto said conveyor, said jaws being slidable along a horizontal path in said frame, said jaw moving means being effective to slide said jaws along said path, a pair of rods mounted for rotation in said frame, motor drive means for driving one of said rods in rotary movement and means for connecting said one rod and said rollers in drive relationship whereby rotation of said one rod drives said rollers.

4,280,619

MOVING BELT CONVEYOR MECHANISM

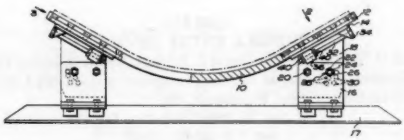
Christopher J. Ward, Barnby Dunn, Near Doncaster, and Septimus Hughes, South Shields, both of England, assignors to Conveyor Improvements (Doncaster) Limited, Doncaster, England

Filed Dec. 3, 1979, Ser. No. 99,979

Claims priority, application United Kingdom, Dec. 19, 1978, 49139/78

Int. Cl.³ B65G *15/08, 15/60*

U.S. Cl. 198—823 **7 Claims**



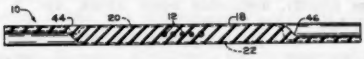
1. A moving belt conveyor mechanism comprising an endless load-carrying belt and means for supporting the belt in the region of a loading point and for causing the belt to trough, said means for supporting being constituted by a troughing mat extending completely across the conveyor and providing a trough section on which the load-carrying belt can slide to cause the belt to trough; bearers disposed on opposite sides of the conveyor mechanism, marginal portions of the troughing mat being secured to said bearers; adjustment means whereby the bearers are angularly adjustable to suit the degree of troughing required, said adjustment means being constituted by angularly adjustable mounting brackets on which the bearers are slidably mounted, screw means being provided for adjusting positions of the bearers on the mounting brackets in a direction transverse to the direction of movement of the load-carrying belt so that a height adjustment of the troughing mat can accompany an angular adjustment of the bearers.

4,280,620

LATERALLY FLEXIBLE CONVEYOR BELT

Charles F. Baker, Jr., Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 15, 1979, Ser. No. 20,697
Int. Cl.³ B65G *15/08*
U.S. Cl. 198—825 **5 Claims**



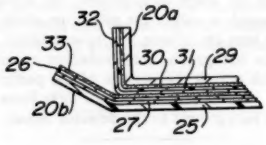
5. In a conveyor belt for carrying bulk material in a path including both straight and transversely curved positions, said conveyor belt being constructed of elastomeric material including a central portion of a rectangular cross sectional configuration and corrugated edge portions extending outwardly from said central portion and further including, embedded in said elastomeric material, longitudinally inextensible reinforcing cables and layers of reinforcing cords extending from edge to edge, the improvement including said belt being molded in and untroughed orientation with longitudinal hinge lines adjacent the lines where the corrugated edge portions meet the central portion, said hinge lines being formed by the layers being spaced from and parallel to each other and to the surfaces of the belt at all points except along the hinge lines where they are positioned closer together than at all other areas.

4,280,621

LAMINAR CHILD RESISTANT PACKAGE

John F. Tonrey, 22 Half Turn Rd., Levittown, Pa. 19056

Continuation-in-part of Ser. No. 920,471, Jun. 29, 1978, Pat. No. 4,196,809. This application Sep. 17, 1979, Ser. No. 76,239
The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.
Int. Cl.³ B65D *73/00, 83/04*
U.S. Cl. 206—534 **8 Claims**



1. In a laminar child resistant package comprising a foldable blister layer, a foldable auxiliary layer of substantial thickness and in facing relation with said blister layer, releasable adhesive means securing said layers together in facing relation throughout an entire area, and fold indicia associated with said layers indicating folding of said layers across said area and toward said auxiliary layer, to extend the blister layer about the fold of the auxiliary layer and place said adhesive means in shear, said adhesive means being sufficiently weak to release in shear upon the folding of said layers toward said auxiliary layer causing the layers to separate apart.

4,280,622

TAPERED INSERT

Bennie C. Nelson, Jr., Romeoville, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 12, 1979, Ser. No. 102,741
Int. Cl.³ B65D *5/50, 81/00, 85/30*
U.S. Cl. 206—592 **2 Claims**

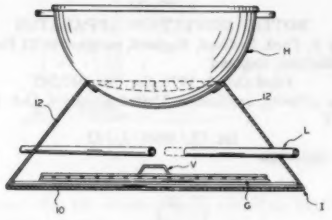
1. A tapered packing insert, for holding an article within an outer container, formed a unitary blank of foldable paperboard and comprising:

(a) a generally rectangular bottom wall;

(b) pairs of opposed side walls foldably joined at their lower edges to and extending upwardly and inwardly from adjacent side edges of said bottom wall;

(c) integral corner locking means interconnecting ends of adjacent side walls, including:

(i) a pair of generally triangular first corner flanges foldably joined at their upper edges to end edges of respective side walls and extending downwardly therefrom toward said bottom wall in face-to-face relation with each other;



(ii) a pair of generally triangular second corner flanges foldably joined at corresponding side edges to lower edges of respective first corner flanges and extending outwardly therefrom toward related side walls in face-to-face relation with said bottom wall;

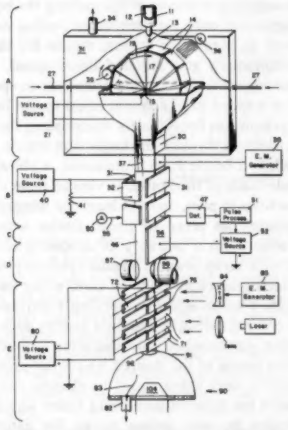
(iii) at least one locking tab foldably joined to one of said first flanges and received within a complementary slot in the other of said first corner flanges.

4,280,623

METHOD AND APPARATUS FOR CONTROLLING, ORIENTING AND ANALYZING BIOLOGICAL CELLS IN LIQUID SUSPENSION

Gildardo S. Legorreta, 3121 Parana, Providencia, Guadalajara, Jal., Mexico

Filed Feb. 4, 1980, Ser. No. 118,340
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—3.1 **44 Claims**



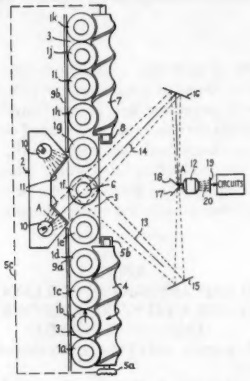
1. Apparatus for orienting, spacing and analyzing cells including:

(a) means for electrically charging cells to a predetermined polarity;

(b) means for separating cells from a cluster of cells, and for flattening the separated cells;

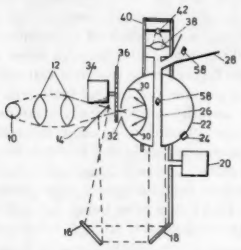
(c) means for suspending the separated and charged cells in a first dielectric liquid;
(d) means for forcing the liquid downwardly; and
(e) means for establishing an electric field to repel the charged cells.

4,280,624
BOTTLE INSPECTION APPARATUS
Geoffrey E. Ford, Bedford, England, assignor to TI Fords Limited, Bedford, England
Filed Oct. 2, 1978, Ser. No. 947,547
Claims priority, application United Kingdom, Oct. 13, 1977, 42553/77
Int. Cl.[3] B07C 5/342
U.S. Cl. 209—524 7 Claims



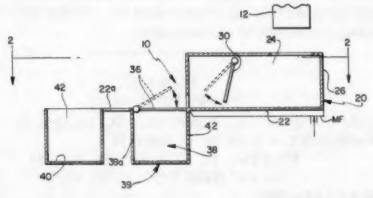
1. Apparatus for inspecting the side walls of transparent or translucent bottles for the detection of dirt or foreign bodies therein while the bottles are being conveyed to bottle filling apparatus, comprising a conveyor for moving the bottles to be inspected, supported only by their bases resting on the conveyor, through an inspection station, means for driving said conveyor continuously at a selected linear speed, means for delivering successive bottles to said conveyor in spaced apart relation and at a speed of movement equal to the linear speed of the conveyor, means for diffusely illuminating the side walls of a bottle as it moves through the inspection station, means for projecting, while a bottle is so illuminated, a plurality of images of the side walls of the bottle, as viewed from at least two different directions in plan, on to at least one integrated circuit device comprising an array of photo-diodes arranged in a plurality of rows with a plurality of diodes in each row in combination with array scanner means cyclically to scan the array and interrogate each diode in turn, along each row in turn, to provide a video signal comprising a sequence of electrical signals corresponding to the light energy each diode has received, means synchronised with said array scanner means to generate gating pulses of the desired length for each row, and means for feeding said video signal to electric circuit means including means for differentiating said video signal and gate means controlled by said gating pulses for gating-out unwanted signals outside the limits of the images of the side walls of the bottle to be inspected whereby to generate differentiated signal pulses representative of dirt or foreign bodies in the bottle, said electric circuit means also including means for inverting the differentiated signal pulses of one polarity so that all signal pulses are of the same polarity.

4,280,625
SHADE DETERMINATION
Jacobus H. Grobbelaar, 18 Truro St., Alberton, Transvaal; Richard N. Colson, 23 Harry van Wyk Ave., Kempton Park, Transvaal; Charlie M. Levitt, 40 Craighall Rd., Victory Park, Transvaal, and Samuel Chatterley, 1 Riethaan St., Florida Lake, Transvaal, all of South Africa
Filed Mar. 21, 1979, Ser. No. 22,514
Claims priority, application South Africa, Apr. 3, 1978, 78/1879; Apr. 3, 1978, 78/1880
Int. Cl.[3] B07C 5/342
U.S. Cl. 209—582 15 Claims



1. Apparatus for determining the shade of a particle which comprises:
(a) means for providing a reference level of illumination;
(b) means for illuminating the particle, in which the relative intensities of the reference level of illumination and of the particle illumination varying; and
(c) means for comparing the intensity of light from at least the particle to the intensity of the reference level to obtain a measure of the shade of the particle, said comparison means includes detector means which is being responsive to the intensity of the illuminated background and in which the particle illuminating means comprises a light source and an integrating sphere, an aperture being formed through a wall of the sphere to admit light from the source into the sphere, the sphere being located in front of the background and including an inlet and an outlet which permit the passage of the particle through the sphere and the transmission of light from the given area of the background to the detector means.

4,280,626
PRODUCT SEPARATION AND GRANULATION SYSTEM
Robert D. Batting, Barrington, R.I.; Donald G. Chabot, Sharon, Mass., and Donald R. Poland, East Greenwich, R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed Oct. 5, 1979, Ser. No. 82,065
Int. Cl.[3] B07B 13/04
U.S. Cl. 209—658 7 Claims



1. A system for the separation of injection molded plastic products including parts and sprue and runner assemblies formed simultaneously therewith wherein said parts are separate from but intermixed with said sprue and runner assemblies, said parts having a relatively small height dimension and said

sprue and runner assemblies having a relatively large web-like co-planar base portion and exhibiting at least one relatively large height dimension which is disposed generally normal to said base portion, comprising a supporting surface for receiving the molded products of a single injection molding cycle including said parts and said sprue and runner assembly therefor, means for conveying said products along said supporting surface, a first barrier disposed in spaced relation above said surface and movable between a first position spaced from said supporting surface at a distance greater than the relatively small height dimension of said parts and less than the relatively large height dimension of said sprue and runner assembly such that said parts are permitted to pass beneath the first barrier to the downstream side thereof while retaining said sprue and runner assembly on the upstream side thereof and a second position disposed at a height above said supporting surface greater than the relatively large height dimension of said sprue and runner assembly such that said assemblies may pass therebeneath to the downstream side thereof, a second barrier disposed downstream of said first barrier and movable between a first position wherein said second barrier forms a portion of said supporting surface and a second position elevated therefrom whereby products conveyed along said supporting surface upstream thereof will be deflected downwardly thereof, granulation means operatively associated with said second barrier and having at least a portion thereof disposed therebeneath, a parts receiving means disposed at the downstream terminus of said supporting surface and positioned therebeneath, and means responsive to each molding cycle of said injection molding machine for initially sequentially maintaining said first and second barriers in the first positions thereof such that parts from said molding machine on said supporting surface upstream of said first barrier will be conveyed initially beneath said first barrier and thereafter over said second barrier to said parts receiving means and thereafter for shifting the position of said first and second barrers to their second alternate positions whereby the sprue and runner assembly of said parts initially located upstream of said first barrier will pass therebeneath and be diverted by said second barrier into said granulation means thereby affecting a sequential separation of said parts and sprue and runner assemblies including the temporary storage of said parts and the granulation of said assemblies.

4,280,627

HEAVY-DUTY CRANE WITH COUNTERWEIGHT

Rudolf Becker, Ehingen, Fed. Rep. of Germany, assignor to Liebherr-Werk Ehingen GmbH, Ehingen, Fed. Rep. of Germany

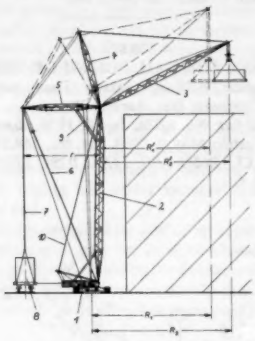
Filed Jan. 5, 1979, Ser. No. 1,074

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839665

Int. Cl.³ B66C *23/72*

U.S. Cl. 212—198 **6 Claims**

1. A goliath crane comprising a rotatable upper carriage, a heavy-duty jib supported by the upper carriage, a telescopic counter-jib hinged to an upper tip of said heavy-duty jib, a counterweight, a cable attaching the counterweight to the counter-jib for counterbalancing purposes, means for interconnecting the upper carriage and counterweight so that the counterweight is movable towards and away from the upper carriage in conjunction with telescopic movement of said counter-jib, the counterweight being swivellable by turning of the upper carriage, a needle jib hinged to the tip of the heavy-duty jib, means disposed between the counter-jib and needle jib for guying the needle jib from the counter-jib, the counter-jib overhanging the upper carriage so far that the counterweight secured to it by the cable is diposed beyond the confines of the upper carriage of the crane, the counterweight being spaced from the upper carriage and being supported by the cable in



such manner that the counterweight exerts no force on the upper carriage when the crane is unloaded.

4,280,628

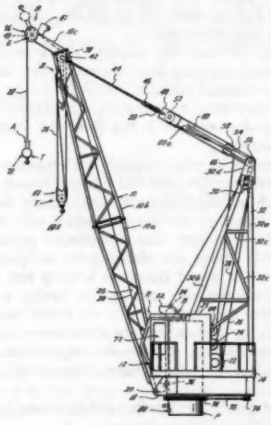
ANTI-TWO BLOCK SYSTEM

John B. Goss, 7627 Beach Cove La., and William D. Morrow, 10206 Amblewood, both of Houston, Tex. 77072

Continuation-in-part of Ser. No. 892,018, Mar. 31, 1978, Pat. No. 4,184,600. This application May 14, 1979, Ser. No. 38,814

Int. Cl.³ B66C *15/00*

U.S. Cl. 212—266 **9 Claims**



1. An anti-two block system adapted to be used with a crane, the crane having a boom with a boom tip, the boom tip having sheaves mounted on a sheave carrier therewith, the crane adapted to lift loads with a hydraulically actuated hoist line extending over the sheaves and having a travelling member affixed therewith, comprising:

a frame member pivotally mounted with the sheave carrier adjacent the sheaves for unencumbered rotation about the sheave carrier as the boom tip moves during lifting operations; and,

engaging means mounted with said frame member adjacent the boom tip for engaging the travelling member when the travelling member moves to a fixed distance within close proximity to the boom tip during lifting operations of the travelling member with the crane, said engaging means including an engaging member mounted with said frame

member for engaging the travelling member at said fixed distance and preventing further movement of the travelling member towards the boom tip.

4,280,629

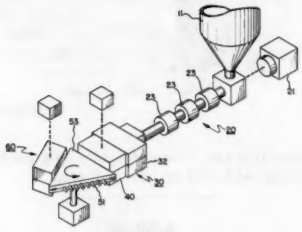
CONTAINER FOR NAIL POLISH OR THE LIKE

Bobby L. Slaughter, Wildwood Estates, Tenn., assignor to Anchor Brush Company, Inc., Aurora, Ill.

Continuation of Ser. No. 1,820, Jan. 8, 1979, abandoned. This application May 9, 1980, Ser. No. 148,100

Int. Cl.[3] **B65D** *1/02, 23/00;* **B29C** *17/07*

U.S. Cl. 215—1 C **10 Claims**



1. A method of making a transparent, colorless, strong-solvent-resistant bottle comprising the following steps:

(a) providing a mixture of particles of transparent as-reacted low molecular weight polyacrylonitrile resin having a natural yellow cast and a sufficient quantity of a dye material, compatible with said resin and having a complementary color which when dispersed throughout said resin in a given ratio will cancel the color of the resin, to provide said given ratio,

(b) feeding the resin-dye mixture into a feeding end of a heated reciprocating screw injection unit and dispersing said dye material uniformly throughout the resin to form a colorless plastic, by intermittent rotation of the screw, as the resin-dye mixture is fed from the feeding end to a barrel nozzle,

(c) determining by experimentation a temperature profile for the screw injection unit and a barrel nozzle temperature, to match actual dimensions and surface finishes of the particular screw injection unit, said profile being selected to be the minimum time-temperature product which is sufficiently above the plastic point temperature for the resin used to avoid frictional heating hot spots due to shear concentration, said profile having a temperature rising from the feeding end to the barrel nozzle,

(d) maintaining the temperature of the screw injection unit at said experimentally determined temperature profile along the length of the unit, within a tolerance of approximately ±3° C.,

(e) without any further cooling and reheating cycle injecting said colorless plastic a parison mold,

(f) venting any gases released from the resin in the parison mold,

(g) transferring the parison to a blowing mold while maintaining the colorless material in a plastic state, and

(h) forming the colorless plastic into a bottle in the blowing mold.

4,280,630

CONTAINER WITH HANDLE

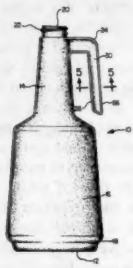
Robert X. Hafele, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 14, 1979, Ser. No. 75,590

Int. Cl.[3] **B65D** *1/02*

U.S. Cl. 215—100 A **10 Claims**

1. In a hollow thermoplastic container, blow molded from an injection molded preform, said container being closed at one end and terminating at the other end in an open mouth, the improvement comprising: said container having a blow molded neck portion and additionally having an injection



molded handle integral with said container, said handle being attached at only one point to said container at said blow molded neck portion and being formed contemporaneously with the formation of said preform.

4,280,631

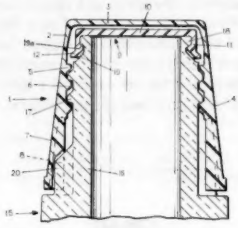
SAFETY CLOSURE AND CONTAINER WITH SNAP CAP LINER

Richard D. Lohrman, Mundelein, Ill., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 10, 1980, Ser. No. 128,423

Int. Cl.[3] **A61J** *1/00;* **B65D** *55/02, 85/56*

U.S. Cl. 215—204 **8 Claims**

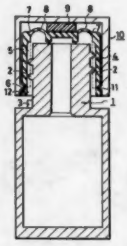


1. An improved child resistant safety closure adapted for threadable attachment on a container having a generally cylindrical hollow dispensing end including an externally threaded neck portion, an annular rim defining a dispensing opening, an annular groove adjacent said dispensing opening, and locking means on said container to lock said closure on said dispensing end when said closure is threadably rotated to a fully closed position on said neck portion, said closure comprising: an outer closure having a top panel and an annular skirt portion depending therefrom, said annular skirt including threads on the interior surface thereof adapted to engage the threads of the neck portion of said container and means to releasably engage said container locking means, an inner sealing closure having a top panel section, a depending annular skirt section depending from the periphery of said inner closure panel section, means on said inner closure skirt to snugly engage said annular groove to effect a seal of the container, and means on said outer closure for retaining said inner sealing closure within said outer closure, said last mentioned means permitting a limited axial movement of said outer closure, in either direction without interferring with the sealing engagement of said inner sealing closure and the cotainer annular rim.

4,280,632
BOTTLE CAP

Yukitomo Yuhara, 5-29-10, Tachibana, Sumida-ku, Tokyo, Japan

Filed Dec. 4, 1979, Ser. No. 100,123
Claims priority, application Japan, Sep. 17, 1979, 54-126877[U]
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—331 4 Claims

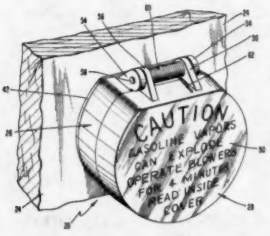


1. A cap for closing a bottle shaped container comprising:
an inner lid (4) having a ring groove (6);
an outer lid (10) encompassing the inner lid and having a lateral rib (11) received in the ring groove;
said inner lid comprising a sealing plate (7) forming the top thereof and having a central portion connected to a side peripheral portion by a flexible hinged structure (8) so that the central portion is movable with respect to the peripheral portion; and
cushion material (9, 13) disposed between the central portion of the inner lid and the outer lid for urging the central portion into contact with the container.

4,280,633
SAFETY WARNING DEVICE FOR IGNITION SWITCH

Stephan A. Boros, Box 61, Grand Rivers, Ky. 42045

Filed Dec. 12, 1978, Ser. No. 968,721
Int. Cl.³ H02G *3/14*
U.S. Cl. 220—241 3 Claims

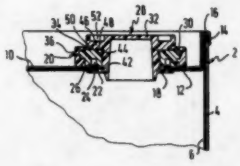


1. A safety warning device for an ignition switch mounted on a control panel, comprising:
a cup-shaped base member having a flat base portion adapted to be secured to the control panel on which the ignition switch is mounted, said base portion having an enlarged opening formed therein to receive the ignition switch and an upstanding peripheral rim raised substantially above said ignition switch to protect said switch, said peripheral rim of said base member includes an outer lip portion adapted to fit inside and engage said edge portion of said cover member to protect the ignition switch against contamination;
a cup-shaped cover member having a flat cover portion and an edge portion adapted to engage said peripheral rim of said base portion, said outer lip portion and said edge portion are oppositely tapered around the periphery to mate and to enhance the sealing function;
hinge means pivotally connecting said base and cover members together to allow said cover member to be pivoted from a closed position with its edge portion engaging said peripheral rim of said base member to an open position allowing access to the ignition switch;
means for normally holding said cover member in its closed position to preclude access to the ignition switch and provide protection against contamination, said holding means comprises a constantly operable bias spring for normally urging said cover member toward its closed position; and
warning means provided on said cover member for display when said cover member is in its closed position, said warning means is formed on the outside and inside faces of said cover member to be selectively displayed with said cover member in its closed or open position.

4,280,634
DEVICE FOR THE REPEATED OPENING AND CLOSING OF AN APERTURE IN A COVER OF A CONTAINER

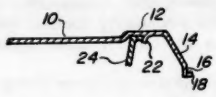
Alfred Wiesenberger, Wiesbaden-Sonnenberg; Lutz Mager; Erich Kolb, both of Nieder-Olm, and Karl Kreim, Fränkisch-Crumbach, all of Fed. Rep. of Germany, assignors to Firma Peter Eckes and Adam Heldmann Kunststoffverarbeitung, both of Fränkisch-Crumbach, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,540
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849755
Int. Cl.³ B65D *53/00*
U.S. Cl. 220—270 9 Claims



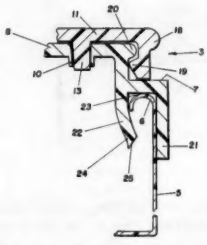
1. Device for the repeated opening and closing of an aperture in a container comprising a cover for the container having an outer surface and an inner surface with an aperture therethrough, said cover comprising a plurality of layers including a layer of metal and a layer of plastics material in contact with and covering said metal layer with said layer of plastics material forming the inner surface of said cover, a pouring member having a pouring opening therethrough inserted through the aperture in said cover and having a first portion extending inwardly of the inner surface of said cover and a second portion extending outwardly from the outer surface of said cover, the inner portion of said pouring member having a flange located inwardly of said layer of plastics material and extending outwardly from the aperture in said cover over and in contact with said layer of plastics material, said flange being tightly adhered to said layer of plastics material, said second portion of said pouring member having an outwardly projecting bulge spaced outwardly from and extending over the outer surface of said cover, and a closing member for said pouring member fitted over the outer portion of said pouring member and tightly surrounding said bulge.

4,280,635
VASE COVER
Richard W. Murphy, 17846 San Clemente St., Fountain Valley, Calif. 92708
Continuation-in-part of Ser. No. 928,723, Jul. 27, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 64,118
Int. Cl.[3] B65D 43/10
U.S. Cl. 220—306 2 Claims



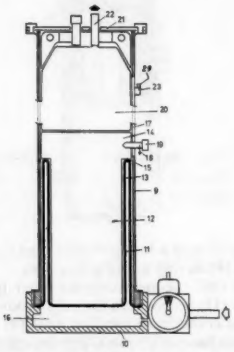
1. A cover for a vase comprising:
a flat recessed surface;
a flat raised surface ajoining the periphery of said recessed surface;
sloped edges from said raised surface 15° to 45°;
a circumferential edge 90° to said flat top surface and adjoining said sloped edge; and
a plurality of angular flanges arranged in a circle on the underside of said flat raised surface that interface with a lip bulb on a vase snapping into place and firmly attaching said lip to said vase.

4,280,636
CONTAINER COVER LOCKING ASSEMBLY
Duane H. Lewis, Claysville, Pa., assignor to Continental Plastics, Inc., Washington, Pa.
Filed Apr. 21, 1980, Ser. No. 141,953
Int. Cl.[3] B65D 39/00
U.S. Cl. 220—307 7 Claims



1. A locking assembly for a container cover used with a container body of the type having a cover seat formed from the inwardly curved upper edges of the container body's side panels, comprising:
a base member;
a continuous peripheral skirt depending downwardly from said base member;
a ridge depending downwardly from said base member, said ridge being spaced inwardly from and parallel with said skirt and forming together with said skirt and the portion of said base member between said skirt and said ridge a mounting channel which engages said container mounting seat; and
several tapered locking lips depending from said ridge and curving outwardly toward yet terminating short of said skirt for urging said container cover down against said mounting channel.

4,280,637
CONSTANT FEED DEVICE
Susann I. C. Runciman, 6 Birkdale Crescent, Mount Osmond, South Australia, Australia, assignor to Susann I. C. Runciman, Mount Osmond and John R. Thompson, Skye, both of, Australia
Filed Sep. 12, 1979, Ser. No. 75,319
Claims priority, application Australia, Sep. 15, 1978, PD5969; Nov. 17, 1978, PD6819
Int. Cl.[3] B67D 5/32
U.S. Cl. 222—39 7 Claims



1. Apparatus for the administration of parenteral fluids, said apparatus comprising
a container adapted to support a pliant bag containing a liquid to be administered,
pressure applying means to apply a said bag including an outlet means, pressure to said bag to force the liquid therefrom,
said pressure applying means being a rigid piston having a head and elongate body portion of lesser diameter than said head,
a flexible diaphragm connected to said container to form an enclosed pressure area on one side of said piston to roll on said elongate body portion of said piston, with said pliant bag situated on the other side of said piston, and
adjustable pressure regulating means to admit fluid pressure to said enclosed pressure area.

4,280,638
FLUID DISPENSING APPARATUS
Neil W. Keihm, Newark, Del., assignor to ICI Americas Inc., Wilmington, Del.
Filed Oct. 22, 1979, Ser. No. 87,234
Int. Cl.[3] B67D 47/34
U.S. Cl. 222—180 4 Claims

1. An apparatus for dispensing a fluid comprising (a) a container having a globe portion, a neck portion the top part of which is externally threaded, and three lugs spaced around the neck portion below said threaded neck portion and above the globe portion so that two lugs are closer to each other than to the third lug, (b) a rack having anchoring means for attachment to an upright surface and three lug receiving means to interlock with the three lugs on the container and (c) a pump assembly having a delivery end, a pump portion and a dip tube connected with and through an internally threaded cap, so as to provide for insertion of the dip tube into the lower portion

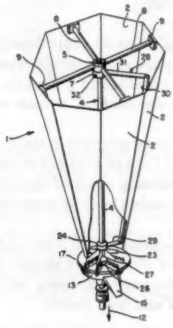
of the globe, threaded engagement of the cap with the threaded portion of the container and interlocking of the three lugs on the container with the three lug receiving means on the rack to form a unitary structure.

4,280,639

DISPENSER FOR GRANULAR OR POWDERED PRODUCT WITH CRENELLATED DISPENSING BLADE

Gerard Lemaitre, La Creuse de Saint-Eanne, 79800 La Mothe Saint Heray, France

Filed Jun. 18, 1979, Ser. No. 49,293
Int. Cl.³ G01F *11/10*
U.S. Cl. 222—217 **7 Claims**



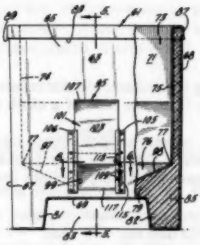
1. A volumetric drum dispenser for the distribution of a granular and/or powdered product, particularly a caking product such as powdered milk, comprising a rotary star-shaped distributor comprising a cylindrical hub on which are mounted a plurality of radial blades which, upon rotation of the hub about its longitudinal axis, move between two parallel walls at right-angles to the said axis, i.e. an upstream wall and a downstream wall, each of said walls having at least one cut-out, referred to as an inlet on the upstream wall and an outlet on the downstream wall, and arranged in such a way that no outlet is even partially opposite an inlet, the outlet being furthermore open over a sector of a circle substantially equal to the sector comprised between an adjacent pair of the radial blades of the distributor, the upstream wall having on its inner face a plurality of projecting studs which are disposed in line with the outlet, and each of said blades which adjoins the said face carrying the studs having a plurality of crenellations radially along the blades so that the crenellations match the projecting studs of the upstream wall.

4,280,640

INTEGRAL DOUBLE-WALL CONTAINER

Pasquale C. Daloisio, New Hope, Pa., assignor to Pennsylvania Pacific Corporation, Warminster, Pa.

Filed Jun. 22, 1978, Ser. No. 918,067
Int. Cl.³ B65D *5/72*
U.S. Cl. 222—561 **3 Claims**



1. An integral double-wall container comprising
an outer shell including a front and a rear wall connected by a pair of sidewalls and a bottom panel connecting the bottoms of all walls,
an inner shell including a front and a rear wall connected by a pair of sidewalls and a bottom panel connecting the bottoms of all walls,
with the inner bottom panel being smooth and flat and without depressions that might retain contents of the container and make cleaning difficult,
and a connection between the inner bottom panel and the inner walls being smooth and continuous and integral and without welds and without openings that would permit passage of contents into a false bottom space between said inner and outer shells,
said container being made of a synthetic plastic,
said rear inner wall being shorter than said front inner wall,
said bottom inner panel sloping downwardly to the bottom of said front inner wall,
and dispensing means at the bottom of said front walls for dispensing the contents from the container as it flows downwardly over the smooth inner bottom panel,
whereby said container forms an integral one-piece double-wall hopper bin for liquid and for powdered material such as abrasives and the like,
a discharge opening molded in the outer and inner front walls,
closure means positioned over the discharge opening for opening and closing the discharge opening to dispense the contents of the hopper bin when desired,
a slide gate,
a pair of slide tracks mounted one on each side of the discharge opening with the slide gate slidable therein,
handle and stop means on said gate for grasping the gate to raise and lower it and for acting as a stop when the gate is closed,
said handle and stop means including a flange extending outwardly from the top of said gate for grasping as a handle and for abutting the top of said slide tracks to act as a stop.

4,280,641
CLOTH SNAG REPAIR TOOL

Dan P. Eacret, Spokane, Wash., assignor to David P. Roberts, Spokane, Wash., a part interest

Filed Sep. 10, 1979, Ser. No. 73,998
Int. Cl.[3] D04B 3/00
U.S. Cl. 223—1 11 Claims

1. A cloth snag repair hand tool for removing a snag of cloth fibers projecting from one side of a cloth at a snag location, comprising:

an elongated, substantially straight, rigid shaft extending from a forward extremity to a knobless rear extremity capable of passing entirely through the cloth at the snag location;

said shaft having a maximum diameter along its length of between 0.635 mm and 1.65 mm;

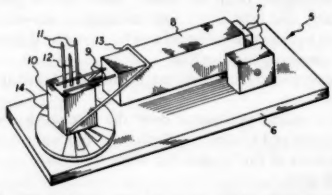
said shaft having a cloth penetration surface section means beginning at the forward extremity and extending toward the rear extremity in which the cloth penetration surface section has an effectively low frictional surface characteristic for easily inserting the shaft into the cloth at the snag location without substantially disturbing the snag; and

said shaft having a barbless frictional surface section means intermediate the cloth penetration surface section means and the rear extremity in which the frictional surface section means has an effectively high frictional surface characteristic for engaging and frictionally drawing the snag from the one cloth side through the cloth without damaging the cloth fibers when the shaft is passed completely through the cloth, entering on the one side at the snag location and exiting from an opposite side of the cloth.

4,280,642
APPARATUS FOR MAKING A BOW

Cam Mele, 12120 Rte. 30, North Huntingdon, Pa. 15642

Filed Dec. 6, 1979, Ser. No. 100,950
Int. Cl.[3] A41H 43/00
U.S. Cl. 223—46 8 Claims



1. An apparatus for the production of a decorative product comprising

(a) a base,

(b) a support member mounted to said base,

(c) an arm pivotably mounted to said support member adapted for reciprocation, said arm including securing means located at the end opposite from said pivotably mounted end,

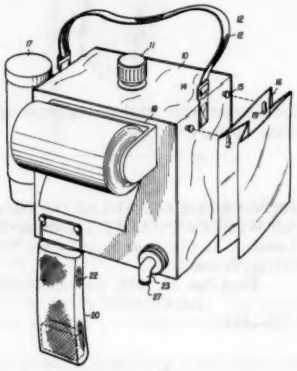
(d) workplate mounted to said base including upwardly projecting guide means and centering means which define a work surface therebetween, said guide means and centering means adapted to engagingly receive material for said decorative product and said workplate positioned to receive thereon said securing means of said arm, and

(e) means for biasing said arm such that said securing means is biased against said workplate.

4,280,643
CAMPING CLEAN-UP EQUIPMENT CENTER

Sam Cordova, and Stella Cordova, both of 13345 Gridley St., Sylmar, Calif. 91342

Filed Oct. 19, 1979, Ser. No. 86,310
Int. Cl.[3] A45F 3/16; A47K 3/23
U.S. Cl. 294—141 6 Claims



1. Portable camping clean-up center comprising:

(a) an essentially square container for water,

(b) said container comprised of a plurality of wall panels,

(c) mounting pegs disposed on at least some of said wall panels,

(d) said mounting pegs securing a disposable trash bag, a cylindrical holder for a plurality of disposable cups, a rack for removably retaining a roll of disposable towels, and a mesh bag for disposably holding soap to respective ones of said panels,

(e) a faucet for dispensing water from said container, and

(f) a shower head for dispensing a showerof water from said container, said shower head being mounted on a lower horizontal one of said wall panels.

4,280,644
PROTECTIVE GUN SLING

Frank A. Shindelka, 24 Glenbrook Blvd., Sherwood Park, Alberta, Canada T8A 2Z2

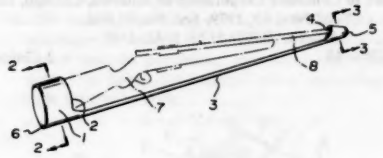
Filed Jun. 3, 1980, Ser. No. 156,073
Claims priority, application Canada, Nov. 28, 1979, 340939
Int. Cl.[3] F41C 33/00
U.S. Cl. 224—149 1 Claim

1. A gun sling comprised of a single integrally molded element of flexible material, said element comprising:

(a) a front end portion having an aperture extending partway therethrough of a size adapted to receive and fit over the muzzle of a firearm;

(b) a second end portion having an aperture extending part-

way therethrough of a size adapted to receive and fit over at least part of the butt of a firearm; and



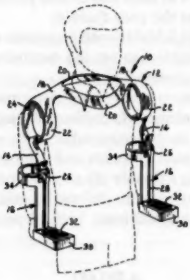
(c) strap means interconnecting each said end portion so as to maintain, when in use, said end portions in elastic engagement with said firearm.

4,280,645

HARNESS FOR LIFTING HEAVY OBJECTS

Dennis D. Goodden, 11525 NW. 76th St., Parkville, Mo. 64152

Filed Jan. 31, 1980, Ser. No. 117,112
Int. Cl.³ A45F *3/14*
U.S. Cl. 224—259 **5 Claims**



1. A device for assisting a person in carrying heavy objects which avoids direct loading of the wrist area, said device comprising:

means for placement over the shoulders of the person;

plural strap means for depending from said over the shoulder means, said strap means being in general alignment with the arms of the person;

a rigid generally L-shaped support coupled with each of said strap means,

each of said supports being characterized by a generally vertical leg of a length substantially spanning the distance between the hand and the elbow and another leg comprising an enclosure having an opening for receiving at least a portion of the hand; and

a sleeve integral with each of said supports and adapted to receive and enclose the arm in the vicinity of the elbow.

4,280,646

TAPE TRANSPORT CAPSTAN

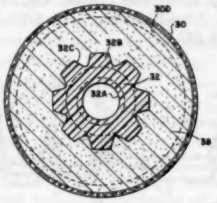
Ivo T. Plachy, San Mateo, Calif., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed May 31, 1979, Ser. No. 44,100
Int. Cl.³ B65H *17/20*
U.S. Cl. 226—190 **15 Claims**

1. A capstan for use in a tape transport system adapted for mounting on a rotatable shaft comprising:

a hub adapted to be rotated about its axis;

a tubular outer rim supported coaxially about said hub, and



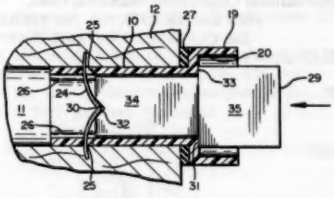
a unitary body portion of homogeneous foam plastic between the full external circumference of said hub and the full internal circumference of said rim.

4,280,647

SLIT VALVE VENTILATOR AND METHOD OF ATTACHING SAME

Gösta Nilsson, Gemla, Sweden, assignor to AB Gemla Plast, Sweden

Continuation-in-part of Ser. No. 924,652, Jul. 14, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 111,891
Int. Cl.³ B25C *7/00*
U.S. Cl. 227—147 **3 Claims**



1. In combination, a generally solid body having a slot-like duct disposed therein;

a frame having opposed parallel top and bottom walls, said frame being insertable in said duct, said frame having an exterior collar fitting around the entrance to said duct, said frame having at least one slot in each opposed top and bottom walls thereof;

at least one generally V-shaped fastener having a pair of angularly disposed legs meeting at an apex, said legs being disposed one in each of said slots in said opposed top and bottom walls of said frame, said apex being disposed toward said entrance to said duct; and

a punch-like installing tool having an enlarged head and a punching portion centrally disposed thereon, said tool being inserted in said frame with said punching portion in engagement with the apex of said fastener, said head being adapted to contact said exterior collar of said frame and bottom thereupon, said center portion extending no further inwardly of said frame than the location of said slots in said walls of said frame when said head bottoms on said collar,

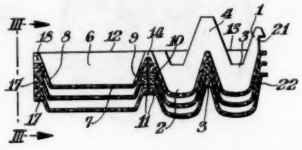
whereby striking said head of said tool spreads the legs of said fastener and drives them through said slots into the walls of said duct, said apex of said fastener being driven within said frame to a point which is not forward of said slots.

4,280,648

MOLDED PAPER PULP CONTAINER

Leon Boursier, Paris, France, assignor to Keyes Fibre Company, Waterville, Me.

Filed Nov. 13, 1979, Ser. No. 93,313
Claims priority, application France, Nov. 16, 1978, 78 32355
Int. Cl.[3] B65D 21/02, 1/36
U.S. Cl. 229—2.5 EC 5 Claims



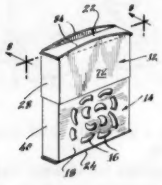
1. A molded pulp container comprising a pocketed bottom section mutually hinged to a flat bottom cover section, both said sections comprising tapered walls bordering on said hinge, the external surfaces of said tapered walls bordering on said hinge having projecting abutting elements which cooperate together to limit inverted folding around said hinge.

4,280,649

AIR FRESHENER CARTON

James Montealegre, W. St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 28, 1979, Ser. No. 108,023
Int. Cl.[3] B65D 13/04; A61L 9/04
U.S. Cl. 229—11 3 Claims



1. A carton for dispensing an active material to the atmosphere comprising:

a first, imperforate sleeve having a pair of opposed major panels connected by a pair of opposed side wall panels forming an outer carton unit, said first sleeve being open at opposite longitudinal ends, and

a second sleeve forming an inner carton unit having a pair of opposed major panels parallel to the major panels of said first sleeve and connected by a pair of opposed side wall panels,

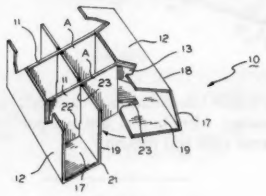
said opposed major panels including a plurality of openings and approximately half of the opposed major panels thereof, said second sleeve being generally of the same cross-sectional shape as said first imperforate sleeve and being received within said first sleeve and slidable therein between a first position defined by abutment of said first sleeve with a projecting sealed closure on one longitudinal end of said second sleeve whereby said openings in said second sleeve are exposed and a second position defined by abutment of said first sleeve with a projecting sealed closure on an opposite end of said second sleeve whereby said openings on said second sleeve are covered.

4,280,650

PARTITION STRUCTURE

Jeffrey M. Gardner, Wheaton; Ronald R. Sensenbrenner, St. Charles, and Bennie C. Nelson, Jr., Romeoville, all of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Nov. 13, 1979, Ser. No. 93,044
Int. Cl.[3] B65D 5/20, 5/42, 5/48
U.S. Cl. 229—15 2 Claims



1. A partition structure for forming six compartments for separation and support of individual articles, said structure being formed from a cut and scored blank of paperboard or the like and comprising:

(a) a pair of laterally spaced opposed transversely extending partition elements in the erected position thereof;

(b) a vertical panel connected along inclined fold lines of gusset members to each end of said partition elements and foldable against the ends thereof;

(c) a bottom panel foldable with respect to each said vertical panel and foldable against the bottom of said partition elements when erected:

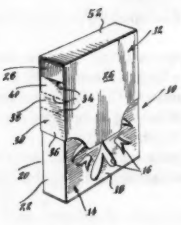
(d) a pair of inner vertical panel elements, each said inner vertical panel element foldable with respect to each said bottom panel to be engageable with said transversely extending partition elements and disposed in face-to-face relation to form a double-ply central portion to provide a number of compartments defined by said transverse partition elements and said inner vertical panel elements.

4,280,651

AIR FRESHENER CARTON

James Montealegre, West St. Paul, and Daniel P. Dutcher, Woodbury, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 31, 1979, Ser. No. 108,848
Int. Cl.[3] B65D 5/38, 5/36; A61L 9/04
U.S. Cl. 229—20 4 Claims



1. A carton comprising:

a first imperforate outer sleeve forming an outer carton unit having a pair of opposed major panels connected by a pair of opposed foldable side wall panels,

a second sleeve forming an inner carton unit having a pair of opposed major panels parallel to the major panels of the first sleeve and connected by a pair of opposed side wall panels,

said second sleeve being nested within said first sleeve and being slidable relative thereto,

said second sleeve being closed by top and bottom closure walls at opposite ends and having a plurality of openings in at least one major panel thereof, and

flexible means connecting said opposed side wall panels of said outer carton unit to the top closure wall of said inner carton unit for preventing said inner and outer carton units from being disassembled while permitting them to slide relative to each.

4,280,652

COVER FOR CONTAINERS

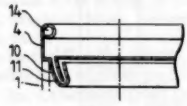
Werner Schmidt, Hamburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Rissen GmbH, Hamburg and 4P Nicolaus Kempten GmbH, Kempten, both of, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 162,038

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 2924538

Int. Cl.³ B65D *5/64, 43/00*

U.S. Cl. 229—43 **9 Claims**



1. As an article of manufacture, a container cover made of stiffened deformable substantially flat material, particularly of cardboard, comprising an annular rim and a plate having a depending flange connected thereto and having a lower edge, said rim including an upper portion, an intermediate portion and a lowermost portion, said depending flange being adjacent to said intermediate portion, said lowermost portion being folded around said lower edge of said depending flange to overlap a part thereof and pressed to said flange to form a downwardly extended lower rim of substantially high rigidity insertable into the container.

4,280,653

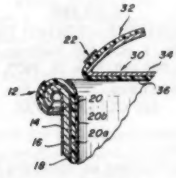
COMPOSITE CONTAINER INCLUDING A PEELABLE MEMBRANE CLOSURE MEMBER, AND METHOD

Thomas C. Elias, Ballwin, Mo., assignor to Boise Cascade Corporation, Boise, Id.

Filed Oct. 1, 1979, Ser. No. 80,557

Int. Cl.³ B65D *5/64*

U.S. Cl. 229—43 **6 Claims**



1. A composite container including peelable membrane closure means, comprising

(a) a vertically arranged tubular composite body member including

(1) a fibrous body wall layer; and

(2) an inner liner layer completely lining the inner surface of said body wall layer;

(3) the upper end of said body member being reversely outwardly curled, whereby the inner liner layer extends around the upper extremity of said reversely curled upper body end;

(b) a horizontal generally circular membrane patch top member extending across said reversely curled upper body end; and

(c) means including a coextruded film laminate bonding said patch top member with said reversely curled upper body end, said coextruded film laminate including

(1) a first layer bonded to said inner liner layer at at least the reversely curled upper end of said body member; and

(2) a second layer bonded to at least that portion of the lower surface of said patch top member that is opposite said reversely curled body end portion;

(3) said first and second layers being bonded to each other with a bond having a coefficient of adhesion that is greater than 3 pounds/square inch but less than the coefficients of adhesion between said layers and said patch top and body members, respectively, whereby upon progressive separation of one edge portion of said patch top member from said reversely curled body one end, one portion of one of said laminate layers is initially torn through itself and the remaining portion of the said one laminate layer is subsequently progressively peeled from the interface surface of the other laminate layer.

4,280,654

THERMOSTAT CONSTRUCTION WITH AN ANNULAR SEALING MEMBER

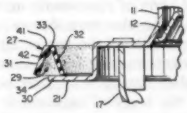
Boyd P. Sliger, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

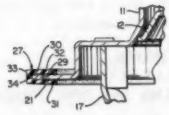
Division of Ser. No. 941,543, Sep. 12, 1978, Pat. No. 4,206,873. This application Jan. 28, 1980, Ser. No. 116,293

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—34.5 **12 Claims**



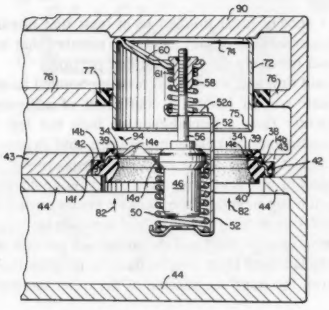


1. In the combination of a thermostat construction having an annular flange secured between an engine block and a water outlet housing, said flange having an annular sealing member with a generally U-shaped cross-sectional configuration disposed about the peripheral end of said flange and with said peripheral end being received in the bight of said U-shape to seal said flange to said block and to said housing, the improvement wherein said annular sealing member initially had its said bight facing at an angle to its said bight in its assembled condition with said flange, said annular sealing member having been assembled to said peripheral end of said flange by having said bight thereof turned from its said initial facing direction to face and receive said peripheral end of said flange therein.

4,280,655
AUTOMOTIVE THERMOSTATIC VALVE

Wayne R. Duprez, Waltham, and Backman Wong, Wayland, both of Mass., assignors to Standard-Thomson Corporation, Waltham, Mass.

Continuation of Ser. No. 4,149, Jan. 17, 1979, abandoned. This application May 22, 1980, Ser. No. 152,381
Int. Cl.[3] F01P 7/02
U.S. Cl. 236—34.5 6 Claims



1. An automotive thermostatic fluid control valve adapted for use in an engine coolant system, comprising a stationary valve member including a sheet metal member having an inner portion integrally connected to an outer annular portion by angularly arranged spoke portions defining coolant flow passages therebetween, said outer annular portion of said sheet metal member including a generally cylindrical reinforcing portion, a body of elastomeric material covering said outer annular portion of said sheet metal member and bonded to said cylindrical portion, said body of elastomeric material including a seat portion forming an annular valve seat, a movable valve member engageable with said annular valve seat, a thermally responsive actuator supported by said inner portion of said sheet metal member, means connecting the thermally responsive actuator to said movable valve member for moving said movable valve member axially relative to said annular valve seat in response to changes in temperature of the coolant, said generally cylindrical portion of said sheet metal member reinforcing said body of elastomeric material and supporting portions thereof for clamping the stationary valve member between components of the engine coolant system without the use of a gasket, and said outer annular portion of said sheet metal member having a support portion adjacent said seat portion of the body of elastomeric material and forming a support for said seat portion of said body of elastomeric material.

4,280,656
CHIMNEY HEAT ECONOMIZER

Mervin D. Swanson, 1625 13th Ave. NW., Puyallup, Wash. 98371

Filed May 4, 1979, Ser. No. 36,228
Int. Cl.[3] F24B 7/00
U.S. Cl. 237—55 21 Claims

1. An improved, modular chimney heat economizer of the type adapted to replace at least a portion of a chimney in a building and of the type comprising:

a plurality of flue tubes adapted to receive therethrough hot combustion gases;

spaced apart upper and lower tube sheets between which are secured said plurality of flue tubes, the ends of said plurality of flue tubes penetrating said upper and lower tube sheets to provide fluid communication therethrough;

an inner sheet metal casing connected between said tube sheets and encircling said plurality of flue tubes; and

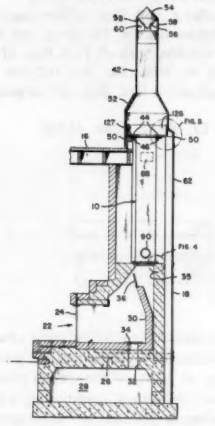
an inlet and outlet in said inner casing in fluid communication with the interior of said inner casing;

wherein the improvement comprises:

a layer of nonflammable insulation at least partially covering the exterior of said inner casing;

an outer sheet metal casing connected between said tube sheets, said outer casing having an inlet and an outlet and encircling both said inner casing and said layer of insulation;

an inlet and an outlet duct connected respectively between the inlets and outlets of said inner and outer casings to provide fluid communication between the exterior of said



economizer and the interior of said inner casing, wherein said inner and outer casings and said insulation significantly increase the fire safety of said economizer and said inner and outer casings are supported by said flue tubes through said upper and lower tube sheets; and

wherein the ends of said flue tubes are welded to said tube sheets and said economizer comprises inner and outer expansion joint means in said inner and outer casings, respectively, to prevent warping of said economizer and to prevent cracking of said welds which might otherwise cause leakage of flue gases from said economizer during the repeated thermal expansion and contraction of said economizer during usage thereof.

4,280,657
CONCRETE RAILROAD TRACK

James L. Ramer, Rte. 1, Box 155, Sullivan, Mo. 63080

Division of Ser. No. 795,480, May 10, 1977, Pat. No. 4,141,499. This application Feb. 26, 1979, Ser. No. 15,261
Int. Cl.[3] E01B 9/38
U.S. Cl. 238—267 3 Claims

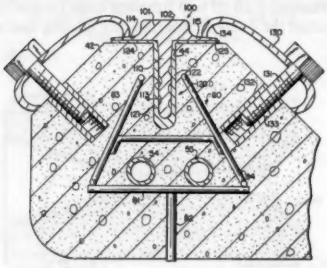
1. In combination:

a concrete rail bed having an upwardly facing slot;

a rail, comprising a rail head having a substantially horizontal upper wheel-supporting surface and a pair of substantially vertical side surfaces joined to said upper surface, a grooved stem extending from said rail heads remote from said upper surface and having a median plane substantially perpendicular to said rail head upper surface, and a pair of flanges extending laterally outwardly on either side of said rail, said stem of said rail extending into said slot; and

an elastomeric insert of U-shape cross section extending longitudinally in said slot between said stem and the walls

of said slot and engaging said stem and said slot walls, whereby said grooved stem and said elastomeric insert



interact to cause an increase in the forces retaining said rail in said slot.

4,280,658

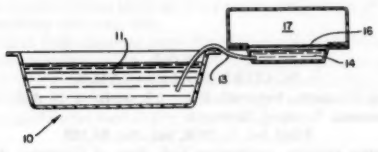
LIQUID FILTER AND MASS TRANSFER MEANS

John E. Ehrrich, Wayland, Mass., assignor to Ercon Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 738,631, Nov. 3, 1976. This application Sep. 14, 1978, Ser. No. 942,376

Int. Cl.[3] **B01D** *13/00, 39/00*

U.S. Cl. 239—6 **9 Claims**



1. A process for supplying filtered liquid to a situs requiring said liquid, said process comprising the steps of simultaneously filtering said liquid through capillary action provided by a thin membrane having nominal pore sizes between 0.05 and 10 microns and wherein said capillary actions draws water through a tube from a reservoir situated beneath said situs requiring liquid, and wherein said process comprises the additional step of transferring said liquid from said membrane to a wick-type distributor of substantially greater surface area than the membrane surface area, and thence to said situs.

4,280,659

FUEL INJECTOR

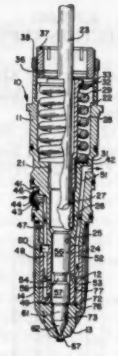
Stephen L. Gaal; Gary L. Gant; George L. Muntean; Neville H. Reiners, and Michael H. Shea, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 23, 1979, Ser. No. 59,543

Int. Cl.[3] **B05B** *9/00*

U.S. Cl. 239—124 **10 Claims**

1. In a fuel injector for an internal combustion engine, the improvement of a generally cylindrical barrel having a longitudinal axis, said barrel having an axially extending plunger bore formed therethrough, a fuel supply passage and a drain passage formed in said barrel, said supply and drain passages extending generally axially and being radially spaced from said bore, said supply passage extending from one end of said barrel to a barrel location that is spaced from the other end, a generally radially extending feed hole at said barrel location and connecting said supply passage with said bore, a first generally radially extending scavenging hole in said barrel and connecting said supply passage with said bore at a barrel location that is between said one end and said feed hole, a second generally radially extending scavenging hole in said barrel generally adjacent said first scavenging hole and connected with said



bore, and said drain passage extending from said end and connecting with said second scavenging hole.

4,280,660

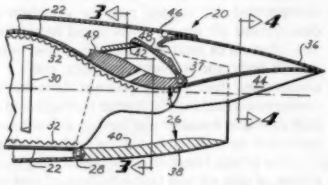
VECTORABLE NOZZLE

William H. Wooten, Jr., Evendale, and Donald W. Speir, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 17, 1979, Ser. No. 67,507

Int. Cl.[3] **B64C** *15/04*

U.S. Cl. 239—265.35 **6 Claims**



1. An improved nonaxisymmetric exhaust nozzle for vectoring exhaust gas flow of a gas turbine engine comprising:

an upper wall partially defining an exhaust stream flowpath;

a first articulated exhaust stream deflector means forming a downstream portion of the upper wall;

said deflector means comprising a variable position thrust vectoring flap that pivots about an upstream fixed duct portion at a position along the fixed duct of generally lesser internal flowpath area and is adapted to deflect and turn the exhaust stream to selected angles relative to engine axial direction; and

a lower wall substantially opposed to the upper wall and further defining the exhaust stream flowpath;

a second articulated exhaust stream deflector means forming a downstream portion of the lower wall;

said second deflector means comprising a variable position control flap operatively connected to a fixed duct portion and cooperating with the deflector means to form a variable position throat therebetween wherein said throat is disposed downstream of the exhaust gas turning when the vectoring flap is in a deflecting mode, wherein the improvement comprises:

an improved control flap having a lower surface defining the exhaust stream flowpath,

an upper surface exposed to a pressurized cavity for the purpose of allowing pressure forces on said upper surface to offset pressure forces from the exhaust stream on the

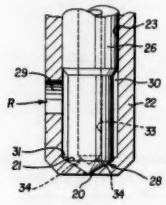
lower surface thereby forming a pressure vessel within said control flap.

4,280,661

INTERMITTENT INJECTION TYPE FUEL INJECTION VALVE

Yasusi Tanasawa; Akinori Saito, and Kiyomi Kawamura, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyoto Chuo Kenkyusho, Aichi, Japan

Filed Sep. 12, 1979, Ser. No. 75,163
Claims priority, application Japan, Sep. 22, 1978, 53/116931
Int. Cl.[3] F02M *51/06*
U.S. Cl. 239—409 13 Claims



1. An intermittent injection type fuel injection valve comprising:

a nozzle body comprising a hollow cylindrical member and having a valve seat and an injection port with a predetermined diameter at one end thereof;

valve means comprising a movable member having a center bore coaxially extended therethrough and having a valve seat at one end, interposed within said nozzle body and intermittently reciprocated therein;

a compressed air supply passage communicating with a compressed air supply source and having an air opening provided on or near at least one of said valve seat of said nozzle body and movable member, and

a compressed fuel supply passage communicating with a compressed fuel supply source through said center bore of said movable member and having at least one fuel opening provided on said valve seat of said movable member;

said valve means intermittently controlling on-off communication of said air and fuel openings of said compressed air and fuel openings of said compressed air and fuel supply passages;

said fuel opening of said compressed fuel supply passage being positioned closer to said injection port than said air opening of said compressed air supply passage;

whereby the compressed fuel is supplied to the flow of the compressed air between said valve seats of said nozzle body and said movable member, and the mixture of the compressed fuel and air is injected from said injection port.

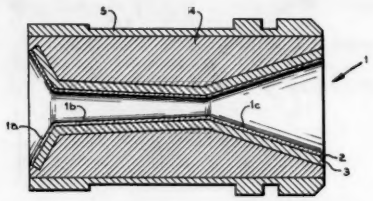
4,280,662

EROSION RESISTANT JET PUMP AND METHOD OF MAKING SAME

John W. Erickson, Huntington Beach, and Harold L. Petrie, Sierra Madre, both of Calif., assignors to Kobe, Inc., Commerce, Calif.

Filed Nov. 16, 1979, Ser. No. 95,763
Int. Cl.[3] B05B *15/00*
U.S. Cl. 239—591 8 Claims

1. The method of making a Venturi chamber for a jet pump having a high erosion and stress resistant internal surface comprising the steps of: machining a graphite mass to produce an internal surface conforming in contour to the desired Venturi chamber but being a few thousandths of an inch larger in all internal dimensions; heating the graphite mass and depositing by the chemical vapor deposition technique a coating of a predetermined thickness on all said internal surfaces, said coating comprising an erosion resistant material produced by chemical reaction of vaporized chemical elements on the hot internal surface of the graphite mass; cooling the coated graphite mass; removing all of said graphite mass except for a substrate adjacent the coating; inserting the coating and substrate



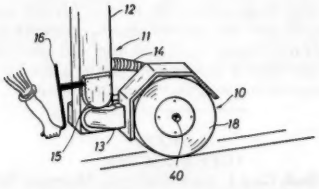
in a cylindrical mold cavity and filling the cavity with a low melting malleable material to produce a cylindrical body having a surface coated Venturi chamber supported therein; and heat shrinking an annulus of high tensile strength material around said cylindrical body to generate a compressive stress in said coating.

4,280,663

SCATTERING APPARATUS

Alfred Thomsen, Vejenvej, Denmark, assignor to A/S Alfred Thomsen, Vejenvej, Denmark

Filed Jul. 9, 1979, Ser. No. 56,105
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2830056
Int. Cl.[3] E01C *19/20;* E01H *10/00*
U.S. Cl. 239—685 12 Claims



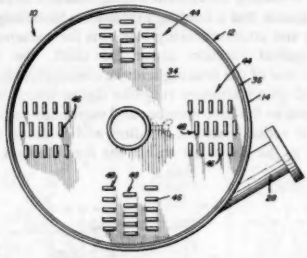
1. In combination with a ground-supported vehicle adapted to be moved along the surface of the ground, apparatus for spreading material comprising a container for the material to by spread mounted on the vehicle; at least one spreading disc rotatable about a vertical axis for receiving material to be spread and for spreading the received material onto the ground; an adjustable speed motor system having a rotary input and having a rotary output drivingly connected to the spreading disc; a material dosing device for discharging material from the container and conveying it to the spreading disc; a driving wheel mounted on the vehicle in a manner to be lowered into driving contact with the ground; a mechanical power transfer device having a rotatable input driven by rotation of the driving wheel, at least one first rotatable output drivingly connected to the dosing device and a second rotatable output drivingly connected to the input of the adjustable speed motor system.

4,280,664

SOLIDS REDUCING AND MIXING DEVICE

Jerald A. Jackson, 2204 Cherry Ridge, Pine Bluff, Ark. 71603, and John W. Holcomb, P.O. Box 116, Star City, Ark. 71667

Filed Apr. 30, 1979, Ser. No. 34,923
Int. Cl.³ B02C *19/06*
U.S. Cl. 241—39 **8 Claims**



1. A solids reducing and mixing apparatus comprising in combination:

a housing defining a generally cylindrical reducing chamber therein;

an inlet tangentially attached to said housing for introducing a solids and fluid mixture into said chamber;

stationary impactors arranged in clusters within said cylindrical chamber, a plurality of said clusters being disposed in spaced relation about an outer peripheral portion of said reducing chamber; and

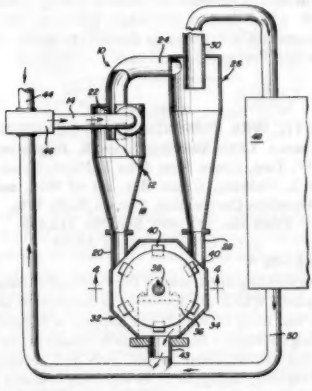
an outlet tube disposed centrally of said reducing chamber and extending axially out of said housing for providing an exit for a combined solids and fluid mixture, wherein a radially inner portion of said reducing chamber surrounding said outlet tube is free from obstruction.

4,280,665

SOLIDS ELIMINATOR

Clyde O. Adams, III, P.O. Box 387, and James F. Fitch, Jr., P.O. Box 363, both of Ashford, Ala. 36312

Filed Apr. 24, 1979, Ser. No. 34,909
Int. Cl.³ B02C *23/10, 23/14, 23/18*
U.S. Cl. 241—62 **4 Claims**



1. A solid eliminator for effecting elimination of solid particles from a solid and liquid combination and pulverizing the solid particles comprising, in combination:

a first cyclone separator having an inlet connected to a source of dry fertilizer ingredients and liquid and receiving the mixed liquid and solid particles, a first outlet for discharging denser materials from the separator and a second outlet for discharging less dense materials from the separator;

a second cyclone separator having an inlet connected to the second outlet of said first cyclone separator and a first outlet for discharging denser material and a second outlet for discharging less dense material;

an impactor means having a pair of inlets connected respectively to the first outlet of said first cyclone separator and said first outlet of said second cyclone separator for pulverizing the material entering the impactor means, said impactor means including a plurality of paddles attached to a common shaft and a motor attached to said shaft for rotating said shaft together with said paddles at a high rate of speed for pulverizing material received thereinto; and an outlet means for discharging said pulverized material, said outlet means of said impactor means being connected to the inlet of said first cyclone separator; and

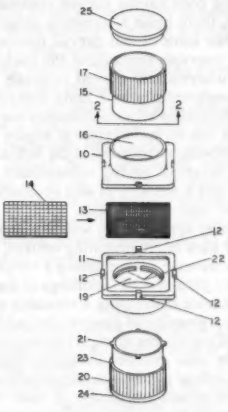
a return line connected from said second outlet of said second cyclone separator to said outlet means of said impactor means for remixing the less dense material with the pulverized material.

4,280,666

HAND HELD GRANULATOR

Robert H. Jones, 4107 Riverside Dr., Apt C, Coral Springs, Fla. 33065

Filed Nov. 13, 1979, Ser. No. 93,545
Int. Cl.³ A47J *42/14*
U.S. Cl. 241—169.1 **10 Claims**



1. A hand-held hand-operated granulator for grinding condiments such as peppercorns and foliage greens which comprises:

a. a first central flange having one generally planar surface and opposite thereto a tubular chamber,

b. a second central flange having one generally planar surface complementary to said planar surface of the first central flange having fastening means to sealingly engage said central flanges about their outermost edges forming a shaped chamber therebetween and having a tubular chamber opposite to the planar surface,

c. a grinding screen for placement in said shaped chamber formed by said central flanges,

d. a first cylindrical container for sliding circular movement within the tubular chamber of the first central flange,

e. a bottom for the first container having means to grip said condiments and hold them against the grinding screen such that grinding takes place when said first cylindrical

container is twisted by the hands with respect to the central flanges,

f. a cap removably attached to the first cylindrical container,

g. a second cylindrical container having one closed end and locking means at the opposite open end for locked insertion in the tubular chamber of the second central flange.

4,280,667

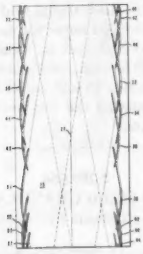
WINDING METHOD AND APPARATUS AND PRODUCT THEREFROM

Richard L. Akers, Cudjoe Summerland Key, Fla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1979, Ser. No. 86,264

Int. Cl.³ B65H *54/28, 55/04*

U.S. Cl. 242—43 R **11 Claims**



1. A cylindrical-bodied yarn package wound on a bobbin in layers of helical coils having helix angles formed by successive strokes, each of said coils having curved reversals connected by helical portions, there being a repeating program comprising a series of at least three of said curved reversals, said program appearing at intervals throughout the package as quasi-ribbon conditions wherein said curved reversals in the series are separated circumferentially by a finite distance from each other such that substantially all yarn crossings occurring in the curved reversals of one series intersect at angles greater than the angles at yarn crossings occurring in the helical portions, at least 50% of said reversals having substantially equal outer half-stroke lengths and a minority of said reversals having any other single reduced half-stroke length.

8. In a yarn winding apparatus for winding generally cylindrical cross-wound yarn in reciprocating strokes, said apparatus including a first traverse device having a reciprocable yarn guide for guiding the yarn over the midrange of the strokes and a second traverse device embodying a rotatable driven cylindrical roller having a plurality of grooves for guiding the yarn at respective ends of the strokes to impart stroke reversal to the yarn guided therein, said grooves having successive helical, reversal curve and helical portions in the surface of the roller, the improvement of which comprises: at least 50% of said reversal curve portions having substantially equal outer half-stroke lengths and a minority of said reversal curve portions having any other single reduced half-stroke length.

4,280,668

THREAD-STORAGE AND DELIVERY DEVICE FOR TEXTILE MACHINES

Fred B. Lindström, Junkoping, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

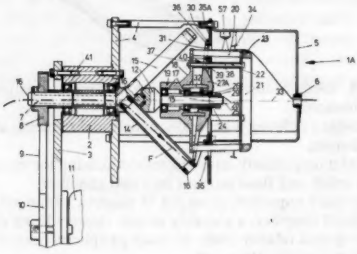
Filed Oct. 3, 1979, Ser. No. 81,583

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843548

Int. Cl.³ B65H *51/20*

U.S. Cl. 242—47.12 **17 Claims**

1. In a thread-storage and delivery device for textile machines, comprising a stationary base member, a shaft defining a first axis and rotatably mounted relative to the base member for driving a thread-feed mechanism which includes a feed element for tangentially winding the arriving thread onto the jacket of a storage drum which is supported rotatably on the shaft, from which drum said thread is unwound over the drum rim which does not face the thread-feed side, a thread advancing member which is positively coupled with the storage drum for advancing the thread windings thereon, said advancing member being rotatably supported on the shaft about a second axis which is inclined with respect to the first axis and effects advancement of the thread windings by an outer section which projects beyond the drum jacket and which carries out an axial pivotal wobbling movement during rotation of the shaft about said first axis, and a holding mechanism including cooperating braking and counterbraking elements for securing the storage drum against rotation about the shaft, the improvement wherein one of the braking and the counterbraking elements is provided on a stationary ring-like flange which is structurally connected to the base member and surrounds the storage-drum jacket in radially spaced relation and with an axial spacing relative to the discharge end of the feed element, the other of



the braking and the counterbraking elements being provided on the outer section of the thread advancing member, the braking and counterbraking elements engaging one another during rotation of the feed element and during wobbling of the advancing member only at a rotating instantaneous point of engagement (P) which is offset relative to the feed element in the circumferential direction of the drum, the instantaneous point of engagement (P) between the advancing member and the flange being contained in a first plane which is perpendicular to the second axis and intersects said second axis at a point (X) which is radially spaced from the first axis, the instantaneous point of engagement (P) also being contained in a second plane which is perpendicular to said first axis, and said instantaneous point of engagement (P) further being contained in a third plane which bisects the angle between said first and second planes and also contains therein the point of intersection (S) of said first and second axes.

4,280,669

AUTOMATIC WEB REWINDER FOR TENSIONED WEB

Dale D. Leanna, Little Suamico; Allen R. Jorgensen, Abrams; Gerald W. Terp, Green Bay; John LaHaye, Green Bay, and Kenneth L. Nehring, Green Bay, all of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Jan. 21, 1980, Ser. No. 113,465

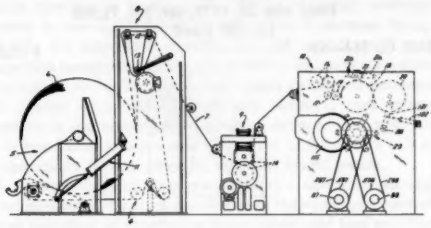
Int. Cl.³ B65H *19/20, 35/04*

U.S. Cl. 242—56 A **33 Claims**

1. Web rewinding apparatus of the type comprising a plurality of mandrels which are movable in succession along a defined path and each of which can support a tubular core for web winding rotation, a bed roll which rotates in one direction about a fixed axis adjacent to said path and around which a web has wrapping engagement as it moves towards a core on one of said mandrels to be wound thereonto, a cutoff roll adjacent to said bed roll and constrained to rotate oppositely to the bed roll in synchronism therewith, a knife carried by one of said rolls and cooperable with reaction means on the other roll for cutting through the web to terminate winding thereof around one of said mandrels and produce a free leading portion

on the web that can be attached to a new core on the next successive mandrel for winding thereonto, pins carried by the bed roll upon which said leading portion is impaled substantially simultaneously with cutting through the web, and transfer pad means carried by the bed roll for substantially radial extending and retracting motion whereby said leading portion of the web is disengaged from said pins and forced into engagement with said new core, said web rewinding apparatus being characterized by:

A. said knife being carried by said cutoff roll for extending



and retracting movement relative thereto and being receivable, when extended, in an opening in said bed roll;

B. said pins being fixed on the bed roll, in said opening therein; and

C. substantially blunt web impalement pusher means carried by said cutoff roll for extending and retracting movement relative thereto substantially in unison with said knife, whereby said leading portion of the web is forced radially inwardly relative to the bed roll and into impalement upon said pins at substantially the same time that the web is cut through by the knife.

4,280,670

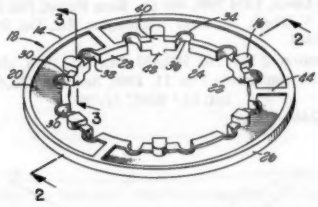
WINDING CORE FOR MAGNETIC TAPE ADAPTED FOR STACKING

S. Allen Schor, Rancho Palos Verdes, Calif., assignor to Elmar Plastics, Inc., Carson, Calif.

Continuation of Ser. No. 24,850, Mar. 28, 1979, Pat. No. 4,201,353. This application Apr. 15, 1980, Ser. No. 140,514

Int. Cl.³ B65H *75/18*

U.S. Cl. 242—68.5 **8 Claims**



1. A winding core for magnetic tape, adapted for stacking between like first and second sandwiching cores, comprising:

a substantially annular body having first and second substantially annular body surfaces, an outer circumferential body surface for winding the tape therearound, a discontinuous inner circumferential body surface and a set of recess surfaces extending between said annular body surfaces and between portions of said discontinuous inner circumferential body surface, said recess surfaces defining a set of recesses for the core;

a set of projections rising from said first annular body surface, each for mating with a recess of the set of recesses of the first sandwiching core;

each of said set of recesses of the core being adapted for mating with a projection of the set of projections rising from the first annular body surface of the second sandwiching core.

4,280,671

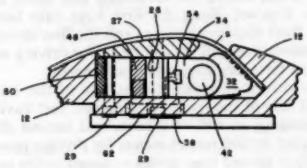
GRIPPER MECHANISM FOR TENSION REEL MANDREL AND THE LIKE

Paul W. Miller, Warren, and Norman H. Fobes, Cortland, both of Ohio, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed May 27, 1980, Ser. No. 153,648

Int. Cl.³ B21C *47/06*; B65H *75/18*

U.S. Cl. 242—78.3 **14 Claims**



1. In combination with a rotatable reel for coiling in a side-by-side fashion a number of bands formed from rolled metal strip in which one or more of said bands may have different cross sectional thicknesses as compared with other of said bands being coiled,

a gripper mechanism for gripping said bands to said reel,

said reel including a container means having an opening,

said gripper mechanism adapted to be received in said opening in a manner to form a gripping slot for the ends of said bands with another cooperative member,

said cooperative member forming a holding surface for the gripping of said bands,

said gripping mechanism comprising a plurality of displaceable gripper bar means,

means received in said opening to move said gripper bar means as a uitary assembly into and out of a gripping position relative to said cooperative member,

each said gripper bar means being constructed and supported so as to be capable of independent movement relative to other of said gripper bar means under the pull of one or more bands gripped thereby to cause an increase in the gripping pressure on said one or more bands by said independent movement.

4,280,672

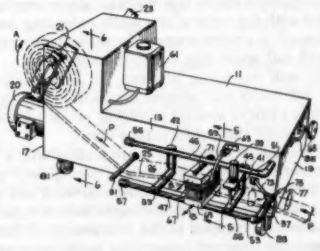
COMPACT FIRE HOSE WASHER AND WINDER

Frank Santos, and Larry E. Santos, both of 2717 Coventry Dr., San Jose, Calif. 95127

Filed Apr. 7, 1980, Ser. No. 138,193

Int. Cl.³ B65H *75/38*

U.S. Cl. 242—86 **16 Claims**



1. A compact fire hose washer and winder comprising,

a frame having two first and second sides between first and second opposite ends,

a first driven reel mounted at a first end on the first side of the frame, said first reel having means for engaging an end of a hose,

a plurality of first hose guides mounted on the first side of the frame between the first and second ends for defining a first hose path between said first reel, at the first end of the frame, and the second end of the frame,

soapy fluid dispensing means disposed along the first hose path near the second end of the frame,

rinse water dispensing means disposed along the first hose path, at least part of said rinse water dispensing means disposed between said soapy fluid dispensing means and said first driven reel,

moving brush means for scrubbing said hose, said brush means disposed along the first hose path between the soapy fluid dispensing means and the first driven reel,

power means mounted on said frame for driving said driven reel and for energizing said brush means,

a second driven reel mounted at one of the ends on the second side of the frame, said second reel having means for engaging an end of a hose, said second driven reel connected to said power means for driving power, and

a plurality of second hose guides mounted on the second side of the frame between the frame ends for defining a second hose path between opposite ends of the frame.

4,280,673

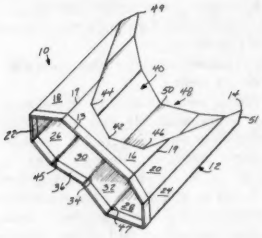
GLIDER

Jeffrey A. Brzack, 140 Maumee Trail, Lake Orion, Mich. 48035

Filed Jun. 13, 1979, Ser. No. 48,610

Int. Cl.[3] **B64C** *31/02, 39/08;* **A63H** *33/28*

U.S. Cl. 244—13 **7 Claims**



1. A glider including a body formed from a multi-sided tube open at it's ends with a leading edge at a forward end and a trailing edge comprising:

a top wall of planar configuration;

a pair of opposed upper side walls of planar configuration, integral with the top wall, extending downward and outward a predetermined distance;

a pair of opposed vertical side walls of planar configuration integral with the upper side walls;

a pair of opposed lower side walls of planar configuration, integral with the vertical side walls, extending downward and inward to a point inward of a vertical extension of the top wall and upper side wall intersection;

a bottom wall extending between the lower ends of said lower side walls and integral therewith, the bottom wall including a pair of upward extending planar sections meeting at a center thereof forming a ridge;

an upper cut-out of symetrical configuration with a forward most point beginning at a center of the top wall spaced in from the leading edge, extending rearward and outward along a first pair of opposed straight lines to a point vertically above and inward of the intersection of the bottom wall and the opposed lower side walls, then extending along a second pair of opposed straight lines more rearward and less outward terminating at the center of the vertical side walls at the trailing edge; and

a lower cut-out of shallow "V" shaped symetrical configuration with the point of the "V" beginning at said ridge spaced toward the leading edge with respect to a line joining the trailing edge termination points of the upper cut-out, and extending in a straight line to the points of trailing edge termination.

4,280,674

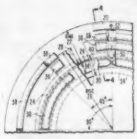
BALLOON WITH DEFLATION PORT

Edward L. Crosby, Jr., West Melbourne, Fla., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,390

Int. Cl.[3] **B64B** *1/62*

U.S. Cl. 244—99 **9 Claims**



1. A balloon, comprising:

an envelope of flexible material and a deflation opening in the envelope,

a rigid frame permanently fastened to the edge of the opening in the envelope,

a ring of flexible sheet material having its peripheral edge removably clamped to said rigid frame, and having a central opening,

a disc of flexible sheet material larger than said central opening and fastened by an adhesive to the outside of the ring all around said central opening in the ring,

a deflation tape fastened to said disc near the edge of the upper half thereof, and having a central free end to be pulled from the exterior of the balloon for peeling the adhesive-held disc off from the outside of the ring to thereby uncover the central opening in the ring and deflate the balloon, and

segments of flexible material fastened by adhesive to bridge an edge of an overlap joint between said ring and said disc.

4,280,675

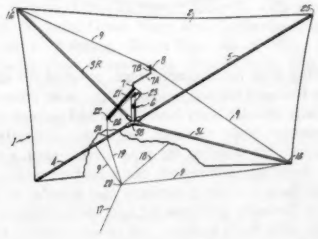
CONTROLLABLE KITE

Lynn M. Davis, 1354 NW. 4th St., Boca Raton, Fla. 33432, and James V. Theis, Jr., 5151 Washington Rd., Del Ray Beach, Fla. 33445

Continuation of Ser. No. 908,653, May 23, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,445

Int. Cl.[3] **B64C** *31/06*

U.S. Cl. 244—155 A **10 Claims**



1. A controllable kite; a control cord for controlling the kite from a location below; attachment means on said kite having an attachment location for connecting one end of said control cord thereto; said control cord being attached to said location; control means for moving the attachment means to which said

control cord is attached to at least two different positions along a substantially lateral line permitting a change in attitude of the kite; means also connecting said control cord to said control means for maintaining the attachment means in one position or actuating the control means to move the attachment means to another position; said control means having a housing rigidly fixed to said kite, said housing having a member movable between different positions; said movable member being connected to said attachment means for moving it; said movable member being a shaft mounted for axial movement and stepped arcuate movement; biasing means for moving said movable member in one axial direction; said movable member being pulled in the other axial direction by said control cord; said means also connecting said control cord to said control means including a mechanical advantage means connected between said control cord and said movable member; cam means mounted on said housing and said movable member to provide for stepped arcuate movement of said movable member as it is moved axially for repositioning said attachment means.

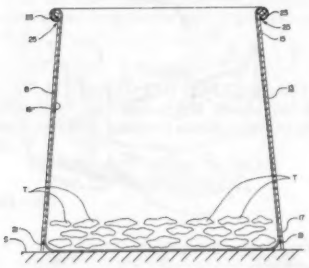
9. A controllable kite comprising a frame, said frame having a keel member and a cross member fixed thereto, flight control means including an attachment point below said keel member and cross member for a control line, means for shifting the attachment point to a plurality of lateral locations relative to the cross member to change kite attitude during flight, a tail streamer removably connected to said kite, removable pin means connecting said tail streamer to said flight control means wherein removal of said pin means in flight will render said kite unstable.

4,280,676

DEVICE FOR HOLDING FLEXIBLE BAGS

William M. Betts, 3217 Canyon St., Memphis, Tenn. 38134

Filed Aug. 1, 1977, Ser. No. 820,751
Int. Cl.³ B65B *67/04*
U.S. Cl. 248—97 **8 Claims**



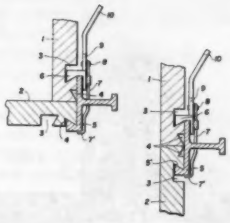
1. A device for holding a flexible, nonselfsupporting bag in an opened position to allow said bag to be filled, said device comprising: a one-piece body member including a continuous side wall member and having a normally upwardly directed end and a normally downwardly directed end, said body member having a cavity extending completely therethrough from said normally upwardly directed end to said normally downwardly directed end for receiving said bag, said side wall having one or more apertures therethrough adjacent and conterminous with said normally downwardly directed end for allowing escapage of air from within said cavity when said bag is inserted into said cavity, said side wall being solid except for said one or more apertures, said cavity constantly increasing in cross-sectional area as it extends from said normally upwardly directed end to said normally downwardly directed end for allowing said device to be easily lifted over said bag after said bag has been filled.

4,280,677

SHUTTERING

Moshe Shahar, 34 Semadar St., Ramath Gan, Israel

Filed May 3, 1979, Ser. No. 35,551
Int. Cl.³ E04G *11/10, 17/02*
U.S. Cl. 249—43 **7 Claims**



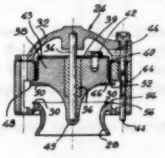
1. A set of elements for construction of shutterings in which concrete or like structures can be cast, the set comprising at least two panels each of which is provided adjacent at least one edge thereof with two parallel grooves in a major face thereof; at least one rail means for connecting said at least two panels, said rail means having profiled portions which can be fitted into either of the said grooves in either of said at least two panels to position said two panels in either a co-planar or angular relative position to one another; and means provided on said rail means for forcibly urging said panels toward one another whenever said profiled portions of the rail means are engagingly inserted in any of said grooves in said two panels.

4,280,678

BLEED VALVE

Ivor J. Roberts, St. Lambert, Canada, assignor to Pratt & Whitney Aircraft of Canada, Limited, Longueuil, Canada

Filed Nov. 29, 1978, Ser. No. 964,485
Int. Cl.³ F16K *31/126*
U.S. Cl. 251—61.2 **2 Claims**



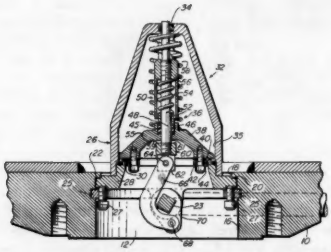
1. A bleed valve to be located at an intermediate portion of a compressor in a gas turbine engine, the bleed valve comprising: a port; an annular valve seat surrounding the port, the valve seat having a radial surface terminating in an outer peripheral circular rim; a sliding piston having two opposed working surfaces, one working surface including a flat radial surface and adapted to close on said valve seat, and the other working surface being flat and being in a chamber in which air under pressure is fed from a second flow path by way of a port opening into said chamber; means for preventing the piston from chattering just prior to closing of the piston on the valve seat, said preventing means including a peripheral inner cylindrical surface on said flat radial surface of said piston, said piston inner peripheral surface having a diameter corresponding to the outer circular rim of the valve seat, the axial component of said piston inner peripheral surface being chosen such as to cut off the bleeding of air just prior to the flat radial surface of the piston closing on the valve seat.

4,280,679

DUALLY-OPERATED TANK CAR BOTTOM UNLOADING VALVE

Harry N. Shaw, Hendersonville, N.C., assignor to The Protectoseal Co., Bensenville, Ill.

Filed Aug. 17, 1979, Ser. No. 67,475
Int. Cl.[3] F16K 31/52
U.S. Cl. 251—144 9 Claims



7. An actuator for a normally-closed poppet valve having an inlet guide bushing therefor and a seat ring installed in a large bore in a mounting flange and operating from outside the seat ring of the same comprising:

(a) a small bore in the mounting flange intersecting the large bore at right angles;

(b) a pair of trunions mounted on the outside of said seat ring;

(c) an actuating stem rotationally mounted in the trunions and extending through and out the small bore in the mounting flange having a coupling means on the outstanding end;

(d) a handle operationally mounted on the other end of said coupling means and extending at right angles thereto;

(e) an arm fixedly mounted at one end to the stem between said trunions;

(f) a pin operationally mounted at the other end of said arm and extending at right angles thereto;

(g) a link operationally connected at one end thereof to said arm pin;

(h) a union ring operationally pinned to the other end of said link;

(i) a guide rod fixedly connected at one end to said union ring and slidingly connected through the poppet of said valve and the inlet guide bushing of the same having a working clearance between said poppet and the union ring; and

(j) a compliance means mounted between the poppet and said guide rod.

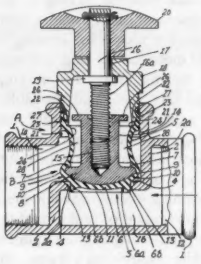
4,280,680

FLUID VALVES

Barrett M. M. Payne, Sandton, South Africa, assignor to Carel W. P. Niemand, Johannesburg, South Africa, a part interest

Filed Aug. 1, 1978, Ser. No. 930,059
Claims priority, application South Africa, Aug. 16, 1977, 77/4944; Aug. 26, 1977, 77/5185; Sep. 16, 1977, 77/5571
Int. Cl.[3] F16K 7/16, 41/10
U.S. Cl. 251—175 24 Claims

1. A valve, comprising: a fluid port; a valve seat round the port; and closure means movable towards and away from the seat, the closure means including a sealing surface engageable with the seat and a protrusion of resilient material which extends from the sealing surface towards the seat, the protrusion being from the sealing surface towards the seat, the protrusion being operative to create a flow of fluid of increased velocity between the seat and the sealing surface prior to the latter engaging the seat upon movement of the closure means towards the seat and the protrusion further being adapted for at least part thereof to be urged automatically into sealing engagement with the surround of the port by fluid pressure in the valve when the sealing surface engages the seat, the closure means further including a resilient diaphragm which is adapted to isolate operating means for the closure means from fluid



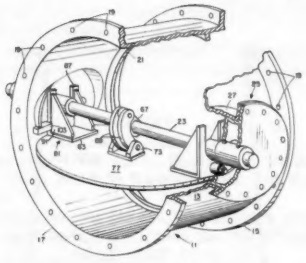
flowing through the valve and which is adapted to be anchored in an outer peripheral zone thereof to a casing for the valve, the diaphragm being provided at its outer peripheral zone with a screw thread engageable with a screw thread on at least one of two parts between which the outer peripheral zone of the diaphragm is adapted to be trapped.

4,280,681

CENTER LINK DISC VALVE

Edward Harris, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jan. 9, 1980, Ser. No. 110,782
Int. Cl.[3] F16K 31/44, 31/12
U.S. Cl. 251—229 11 Claims



1. A disc-type valve comprising:

(a) a valve body;

(b) a valve seat mounted on the interior surface of said valve body and disposed therein so that the seating face of said valve seat is perpendicular to the general path of material flow through said valve body;

(c) a pivotable shaft pivotably mounted through said valve body, the longitudinal axis of said pivotable shaft being positioned so as to be parallel to said seating face of said valve seat;

(d) means for pivoting said pivotable shaft operable in conjunction with at least one end of said pivotable shaft, said at least one end which extends outwardly from said valve body;

(e) means for translating said pivoting of said pivotable shaft into linear motion directed parallel to said general path of material flow through said valve body, said means for translating being arranged and positioned within said valve body such that said linear motion can be centrally directed within said valve body;

(f) a valve disc flexibly connected to said means for translat-

ing, said valve disc being of sufficient size to permit it to mate with said seating face of said valve seat; said linear motion being applied to said valve disc through said flexible connection to cause said valve disc to move;

(g) a pair of tracks, each of said tracks which is disposed adjacent to the periphery of said valve disc, each of said tracks being positioned directly opposite to the other, said tracks being mounted on the walls of said valve body, said tracks being positioned, on the walls of said valve body, each directly opposite the other, said pivotable shaft extending through each of said tracks;

(h) a straight slot section, disposed on each of said tracks, extending generally linearly, perpendicular to said linear axis of said pivotable shaft, from the point on each of said tracks adjacent to where said pivotable shaft extends therethrough, toward said valve seat;

(i) cam means, mounted to said valve disc and fixed in position in relation to said valve disc, operable within said each straight slot section to traverse said each straight slot section;

(j) guide means fixed to said valve disc and operable with said pivotable shaft to maintain said valve disc in alignment parallel to said longitudinal axis of said pivotable shaft and said seating face of said valve seat, as said valve disc is moved into contact with or to leave contact with said seating face of said valve seat;

(k) an arced slot section, disposed in each of said tracks, forming a 90° arc adjacent to the arc of pivotation of said pivotable shaft, each of said arced slot sections forming a continuation of said straight slot section correlated therewith, said cam means being operable within each said arced slot section to traverse each said arced slot section from said point, adjacent where said pivotable shaft extends therethrough where said straight slot section commences, at which said arced slot section forms said continuation of said straight slot section, through an arc of 90°; and

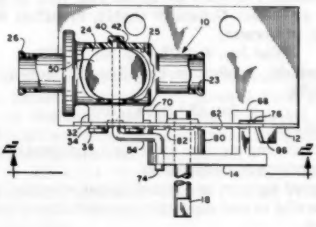
(l) means, mounted on said pivotable shaft and operable with said guide means, to maintain said valve disc in a set position in relation to said pivotable shaft, when said valve disc is not in contact with said seating face of said valve seat, such that the center of said 90° pivotation of said valve disc is said longitudinal axis of said pivotable shaft.

4,280,682

CAM ACTUATED BUTTERFLY VALVE

Keith E. Zukausky, St. Charles, and Donald M. Berlin, Jr., McHenry, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 4, 1979, Ser. No. 45,150
Int. Cl.³ F16K *31/44, 1/22*
U.S. Cl. 251—251 **7 Claims**



1. A fluid valve said fluid valve comprising,

(a) valve body means, said valve body means defining,

(i) a fluid passageway having an inlet and an outlet,

(ii) a valve seat located intermediate said inlet and said outlet;

(b) a valve member rotatably mounted to said valve body means and within said fluid passageway, said valve member movable between a closed position in fluid sealing engagement with said valve seat for preventing fluid flow through said fluid passageway and an open position in which the fluid flow through said passageway is a maximum, said valve member positionable intermediate said closed and open positions for achieving modulated flows;

(c) a crank member connected to said valve member and rotatable therewith, said crank member having a cam follower portion extending exteriorly of said valve body means, said portions defining a cam follower adjacent the free end thereof;

(d) said valve body means including structure defining arcuate guide surface means; and,

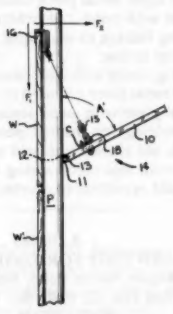
(e) actuator means rotatably mounted to said valve body means and including a portion engageable with and guided by said arcuate guide surface means, said actuator means including means defining a cam surface means, said cam follower portion being directly engageable with said cam surface means wherein the axis of rotation of said actuator means is displaced from the axis of rotation of said crank member such that upon selective rotation of said actuator means a predetermined amount, said crank member and said valve member are angularly displaced relative to said closed position for achieving a predetermined fluid flow rate through said fluid passageway.

4,280,683

UTILITY PULLER

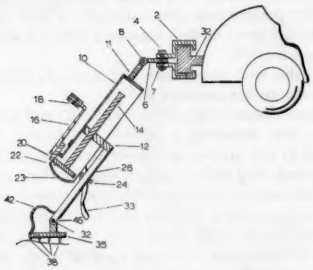
Larry Knierim, Blissfield, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 23, 1979, Ser. No. 59,668
Int. Cl.³ B66F *3/00, 15/00*
U.S. Cl. 254—17 **5 Claims**



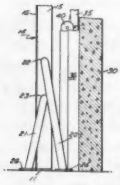
1. An apparatus for use as a utility construction tool comprising a lever arm handle, a grab hook positioned on said lever arm handle, means for anchoring one end of said lever arm handle, said anchoring means including a foot, said foot being substantially wider than said lever arm, said foot including a plurality of adjustable and replaceable pikes extending from the surface of said foot which opposes said lever arm handle, said adjustable pikes being pointed at the end extending from said foot and threaded at the opposing end so as to enable said pikes to be adjustable and replaceable, a work object engaging means separate from said lever arm handle, means for removably connecting said lever arm handle to said work engaging means, said connecting means being fixed to said lever arm handle at a point spaced from said foot and substantially adjacent said grab hook; whereby application of force at said lever handle will pivot said lever arm handle on said anchoring means in a direction away from said work engaging means and produce a concomitant force at said work engaging means in the direction of said connecting means.

4,280,684
MANUAL AUTOMOBILE PUSHER
Francis E. LeVert, 1909 Matthew La., Knoxville, Tenn. 37919
Filed Oct. 23, 1979, Ser. No. 87,325
Int. Cl.[3] B60S 9/02
U.S. Cl. 254—35 1 Claim



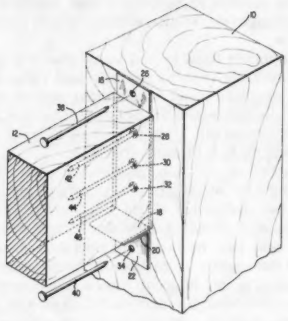
1. An apparatus for freeing vehicles from ice, snow or mud ruts, the device comprising:
an open equal sided rectangular metal channel;
a metal lead screw which is attached firmly to a metal gear;
a spur gear which meshes with said metal gear;
a metal crank with a hand held handle which is permanently connected to said spur gear;
a large rectangular metal nut which is driven by said metal lead screw, with the combination of said metal gear, said metal lead screw and said large rectangular metal nut housed in said open equal sided metal channel;
an equal leg angle metal piece rigidly connected to said large rectangular metal nut;
a metal equal leg angle slotted guide through which said equal leg angle metal piece slides;
a metal plate with metal studs which is connected via a metal connecting linkage to said equal leg angle metal piece by a metal cap screw;
a metal spring clamp which is connected rigidly to said equal leg angle metal piece and used to provide a spring force on said metal plate with metal studs;
means of holding the manual pusher in a stored position when it is not in use, with said means being used in conjunction with said metal spring clamp; and means of attaching said apparatus to a vehicle.

4,280,685
GUARD POST FOR LOADING DOCKS
James E. St. Angelo, Swifts Point, Bristol, R.I. 02809
Filed Feb. 22, 1980, Ser. No. 123,506
Int. Cl.[3] E04H 17/00
U.S. Cl. 256—1 2 Claims



1. In a building having a loading dock opening with a door, a guard post for said opening comprising an upright element, a base plate adapted to be anchored to a supporting surface, two brace members secured to said upright element, said brace members extending away from said upright element at an acute angle to each other, said upright element secured to said base plate, said brace members being secured to said element at a vertical position substantially intermediate thereof and extending away from the element at an acute angle to the vertical extent thereof, means at the terminus of the brace members to anchor the same to a supporting surface, said upright element located substantially in line with said opening and closely adjacent thereto to block contact of a lift truck with the interior face of said opening.

4,280,686
RAIL END MOUNTING BRACKET
David T. Wack, Rte. 1, Box 58, Smallwood Rd., White Plains, Md. 20695
Filed Oct. 25, 1979, Ser. No. 88,153
Int. Cl.[3] E04H 17/14
U.S. Cl. 256—65 3 Claims



1. A fence railing end connector bracket for connecting the end of a fence railing to a post, said connector defined by a flat strip of sheet material of generally rectangular form having an intermediate ledge extending at right angles to its plane, said ledge being defined by a wave projecting from said strip transversely of the length of said strip, said wave being of generally U-shape in longitudinal cross-section, the wave being integral with said strip, said strip having flat attaching portions on opposite sides of said wave, one of said attaching portions having a set of nail receiving apertures intermediate thereof for nailing said connector to a fence rail end, and both of said attaching portions having nail receiving apertures adjacent the terminal ends thereof for nailing said connector to a fence post above and and below said wave.

4,280,687
FLAME CUTTER
Gerhard Münch, Frankfurt am Main, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 4, 1979, Ser. No. 45,077
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824699
Int. Cl.[3] B23K 7/00
U.S. Cl. 266—50 8 Claims

1. A flame cutting machine for severing portions of a moving strand, comprising in combination:
an elongated support, said strand operatively moving above and parallel to said support in one direction of elongation thereof,
rail means disposed on said elongated support,
a carriage having an initial position and being operably movable on said rail means in said one direction and in an opposite direction,
cutting means disposed on said carriage and actuatable for severing said moving strand portions,
synchronizing means for operatively and continuously synchronizing the movement of said carriage with that of said

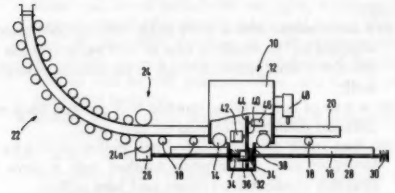
strand in said one direction, said synchronizing means including a rotatable roll couplable to said carriage and in operative driven relationship from said strand,

motion conversion means for converting the rotation of said roll into a translatory motion of said carriage, in said one direction, and including a rotatable and arrestable nut disposed on said carriage, and a spindle in driven connection from said roll engaging said nut,

releasable brake means for arresting rotation of said nut whereby the movement in said one direction of said nut and said carriage by said spindle is initiated, and,

measuring means operatively coupled to said nut through said brake means for determining the moving distance of the carriage from the time of the activation of said brake means to the release thereof,

whereby said carriage is movable in the same direction and at the same speed as said strand, said strand may be cut by said cutting means while the strand is movable in synchronization therewith in said one direction, and said carriage may be returned to said initial position following cutting of the strand by said cutting means.



7. In a method of flame cutting portions of a moving strand, with the aid of an elongated support, rails disposed on said elongated support, a carriage movable on said rails, a cutter disposed on the carriage and actuatable for severing said portions from the moving strand, and a roll couplable to said carriage and in driven relationship from the strand,

the steps comprising:

(a) converting the rotation of the roll into a forward translatory motion of said carriage from an initial position to a measurable end position, so as to operatively and continuously synchronize the translatory motion of the carriage with the motion of the moving strand, during said translatory motion,

(b) measuring the distance covered by said carriage from said initial position to said end position,

(c) concurrently with step (a) so as to correspond to a predetermined length of strand portion to be cut, severing a moving strand portion from a remaining portion of the strand, and

(d) thereafter returning the carriage to said initial position, whereby said strand may be cut by said cutter while the strand is moving in synchronism therewith.

4,280,688

TILTABLE CONVERTER ARRANGEMENT

Bernhard Enkner; Rupert Berger; Manfred Eysn, all of Linz; Hermann Haslehner, Alkoven; Helmut Smejkal, Linz, and Michael Sattler, Ansfelden, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

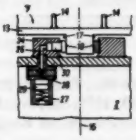
Filed Oct. 30, 1979, Ser. No. 89,526

Claims priority, application Austria, Nov. 10, 1978, 8050/78

Int. Cl.³ C21C *5/50*

U.S. Cl. 266—245 **8 Claims**

1. In a tiltable converter arrangement of the type including a converter vessel having a converter shell, a hollow carrying body arranged about said converter shell, lug pairs accommodating bearing forces for supporting said converter vessel on said carrying body, each of said lug pairs including two lugs arranged opposite each other on both sides of said carrying body, and at least one hydraulically actuatable piston-cylinder unit provided between one lug of each of said lug pairs and said hollow carrying body and including a piston and a cylinder, said piston being hydraulically adjustable in the longitudinal direction of said converter vessel, the improvement comprising an equalizing reservoir containing a hydraulic medium and provided within said carrying body, a hydraulic conduit for connecting said cylinder of said at least one piston-cylinder



unit with said equalizing reservoir, and a check valve installed in said hydraulic conduit and selectively switchable into and out of operation, said check valve, when switched into operation, enabling the flow of said hydraulic medium only in the direction from said equalizing reservoir to said cylinder, and when switched out of operation, releasing said hydraulic conduit for flow in both directions.

4,280,689

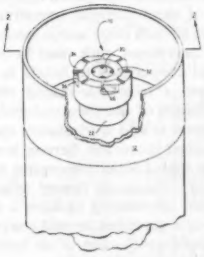
HEAD FOR HIGH SPEED SPINNER HAVING A VACUUM CHUCK

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Frank Lombardi, Altadena, Calif.

Filed Jun. 27, 1980, Ser. No. 163,840

Int. Cl.³ B60G *11/22*

U.S. Cl. 269—21 **1 Claim**



1. A head for a vertically oriented, high-speed spinner characterized by a negative pressure chuck comprising:

A. a body having a substantially cylindrical peripheral surface and a transverse end surface adapted to be connected to a vertically oriented drive shaft and supported thereby for unidirectional rotation about a vertical axis of rotation including,

means defining in the end surface an outwardly facing chamber circumscribed by an annular work-supporting surface adapted to receive in hermetically sealed relation, an impervious work piece;

B. means responsive to a rotation of said body about said axis, in the presence of a work piece received by said work-supporting surface, for reducing atmospheric pressure in said chamber including,

a plurality of angularly spaced, low-pressure cavities uniformly spaced about the periphery of the body in communicating relation with the peripheral and end surfaces thereof, each cavity being defined by a first surface projected into the body in the plane of the axis at the leading portion of the cavity relative to the direction of rotation thereof, a second surface extended from the peripheral surface of the body along a chord thereof, in a plane paralleling the axis and intersecting

said first surface, and a third surface intersecting said first and second surfaces and extended in a plane transversely related to said axis; and

C. means for connecting each of said cavities in communicating relation with said vacuum chamber including,

a segmented bore having a first segment projected through said second surface and extended to communicate with said chamber.

4,280,690

COLLATOR

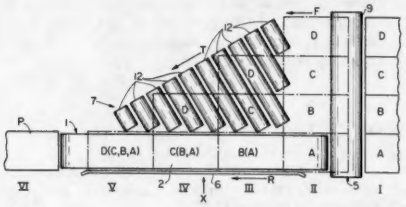
James Hill, 116 Silverdale Rd., Sheffield S11 9JL, England

Filed Jul. 13, 1979, Ser. No. 57,328

Claims priority, application United Kingdom, Jul. 21, 1978, 30762/78

Int. Cl.³ B65H *39/06*

U.S. Cl. 270—58 **6 Claims**



1. A collator comprising a conveyor defining an essentially straight movement path along which plural sheets of material are adapted to be collated in superposed relation to each other, separate supplies of sheet material operatively arranged in side-by-side relation to each other and in lateral offset relation to said conveyor movement path, said conveyor and said supplies of material cooperating to bound in the angle subtended therebetween a triangular-shaped work station for performing said collation of said sheet material, and sheet-conveying means disposed at said work station operatively effective to move individual sheets fed thereon from said supplies thereof along plural angled paths intercepting said conveyor at selected locations in successively spaced relation therealong, whereby at each said intersecting location a different one of said individual sheets is deposited on said conveyor to thereby contribute to the build-up thereon of an assemblage of said sheets in a superposed collated condition.

4,280,691

SHEET FEEDING DEVICE

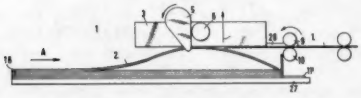
Herbert Blum, Wiesbaden-Schierstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,746

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731095

Int. Cl.³ B65H *3/12*

U.S. Cl. 271—11 **18 Claims**



1. A sheet feeding device for the automatic feeding of individual sheets from a stack to an apparatus, having front and delivery ends, comprising:

(a) lower sheet carrier rollers positioned between said stack and said apparatus;

(b) upper sheet feed rollers carried on a first shaft in resilient contact with said lower carrier rollers;

(c) a suction chamber, displaceable in the direction of transport of said sheets from said stack to said apparatus, wherein said chamber comprises:

(i) a perforated base plate;

(ii) a cover plate provided with a suction opening located over said base plate; and

(iii) ventilator means for providing suction to said chamber, said ventilator means being positioned over said suction opening in said cover plate;

(d) a pair of vertical walls between which said suction chamber is located; and

(e) means for displacing said suction chamber;

(f) means for guiding the displacement of said chamber in the direction of transport;

(g) said means for displacing said suction chamber comprising:

(i) a drive motor with a drive shaft, wherein said motor is attached to the inside of one of said vertical walls and said drive shaft passes through to the outside of said one wall;

(ii) a pair of belt driving toothed belt pulleys, each with different diameters, carried by said shaft;

(iii) feed roller driving toothed belt pulley, driven by the larger of said belt driving toothed belt pulleys and operably connected to rotate said feed rollers;

(iv) a second shaft connected to extend perpendicularly from the outside of said one vertical wall to which said motor is attached;

(v) a cam carried by said second shaft, said cam co-operating with said suction chamber to effect displacement thereof; and

(vi) a cam driving toothed belt pulley connected to said cam and driven by the smaller of said belt driving pulleys.

4,280,692

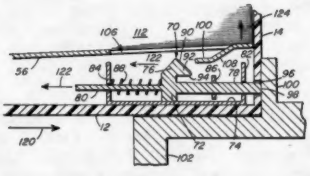
CASSETTE WITH LOCKABLE LIFT PLATE

Peter Hutchinson, and Henry T. Pauk, both of Nashua, N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Feb. 21, 1980, Ser. No. 123,389

Int. Cl.³ B65H *1/12*

U.S. Cl. 271—160 **2 Claims**



2. A photocopier sheet holding assembly comprising:

a tray for holding sheets of material in a stack and adapted to be inserted into a receiving opening in the frame of a photocopier for engagement of said sheets by sheet feeding apparatus,

said tray being defined by a frame and having

a paper lift member mounted in said tray above a frame bottom wall for pivotal movement about a rear edge of said member, and

means for biasing said paper lift member upwardly, wherein the improvement comprises:

a latching assembly having

a first latch member mounted on said paper lift member, having a first camming surface,

a second latch member mounted on said tray frame for movement between a first position wherein said second latch member can engage and maintain said first latch member in a paper loading condition and a second position wherein said second latch member is out of engaging and locking contact with said first latch member, comprising:

a latch head having

a first surface for lockingly engaging said first latch member when said second latch member is in said first position, said first surface being moved out of engagement with said first latch member when said second latch member is in said second position, and

a second camming surface disposed with respect to said first camming surface of said first latch member to urge said second latch member from its first position toward its second when said paper lift member is urged downward,

a first horizontally directed forward rod member secured at one end to said latch head and defining at its other end a rod surface for engaging a cooperating surface of said photocopier when said tray is inserted into its operative position in said photocopier to move said second latch member from said first position to said second position when said tray is in its operative position,

a second horizontally directed rearward rod member secured at one end to said latch head,

means for mounting said second latching member for supporting and slideably passing therethrough said rearward member,

bias means comprising a coil spring coaxial with said rearward member for urging said latch head in a forward direction, and

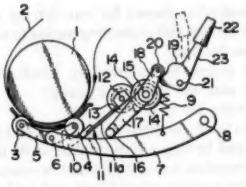
stop means cooperating with said forward rod member for limiting the movement of said latch head in a forward direction.

4,280,693

SHEET FEEDING DEVICE FOR PRINTING APPARATUS

Koh Matsuhisa, Kanagawa; Mamoru Takezawa, Yokohama, and Yoshio Kawajiri, Zama, all of Japan, assignors to Ricoh Co., Ltd., Japan

Filed Dec. 22, 1978, Ser. No. 972,324
Claims priority, application Japan, Dec. 28, 1977, 52-157475
Int. Cl.³ B65H *9/06*
U.S. Cl. 271—246 **7 Claims**



1. A sheet feeding device for a printing apparatus comprising:

a pressing roller operable to be brought into and out of pressing contact with a platen;

stopper hook means located in a position in which a sheet impinges thereon and comes into contact therewith after the sheet has moved a small distance between said platen and said roller with said roller out of contact with said platen;

means mounting said stopper hook means for movement from a position in which the sheet impinges thereon and comes into contact therewith, with said stopper hook means in contact with said platen and said platen and said roller are out of pressing contact with each other, to a position out of contact with the sheet and said platen only after said roller has come into contact with said platen to hold the sheet;

one additional roller operable to be brought into and out of contact with said platen, said stopper hook means located midway between said first-mentioned and additional roller in a path of movement of the sheet fed to said platen, and;

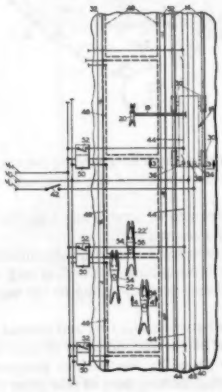
a stopper shaft supporting said stopper hook means and pressing arm means supporting one of said first mentioned and additional roller and capable of moving in pivotal movement in a predetermined range, connected together by transmitting and connecting means; said transmitting and connecting means connecting together said stopper hook means and said pressing arm means comprising a first gear wheel secured to said stopper shaft supporting said stopper hook means, a second gear wheel supported by a release shaft and in meshing engagement with said first gear wheel, release arm means secured to said release shaft and moving in pivotal movement as said second gear wheel rotates, resilient means forcing said pressing arm means against said release arm means by its biasing force, and said first gear wheel and said second gear wheel are in the form of an intermittent drive gear.

4,280,694

RACE TRACK LURE SPEED CONTROL ASSEMBLY

Lorn L. Trickel, 8806 NE. Thompson St., Portland, Oreg. 97220

Filed Apr. 18, 1980, Ser. No. 141,641
Int. Cl.³ A63K *1/02*
U.S. Cl. 272—4 **12 Claims**



1. For use with a powered race track lure assembly including a lure, an electric-motor-driven carriage mounting the lure, and rails extending along the track, a lure speed control assembly comprising:

(a) an electric circuit including the motor, selected rails, and a plurality of inductive loops placed sequentially along the track for traversal by contestants during a race;

(b) an inductance altering element carried by each contestant, each inductance altering element acting to change the inductance in each inductive loop as it is traversed by each contestant; and

(c) means in the electric circuit responsive to the change in inductance and operable to modify the speed of the motor, and hence the rate of advancement of the lure, as required to maintain the lure immediately ahead of the lead contestant.

4,280,695

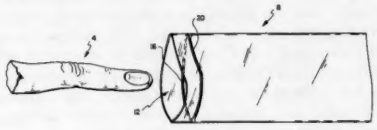
PRODUCT FOR SIMULATING A HUMAN BODY PART

Jerome C. Stenehjem, 193 E. Girard Ave., Salt Lake City, Utah 84103, and Stephen C. Jacobsen, 1804 Michigan, Salt Lake City, Utah 84108

Filed Feb. 11, 1980, Ser. No. 120,531

Int. Cl.³ A63J *3/00, 5/00;* **A63H** *33/00*

U.S. Cl. 272—8 N **12 Claims**



9. A product simulating a human body part composed of a mixture of algin, fillers, sequestriants, calcium source and water in proportions such that the mixture has the characteristic of an elastic solid, said solid being formed in the shape of a human body part.

4,280,696

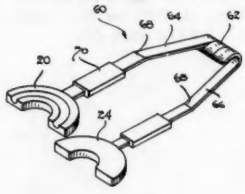
JAW AND FACIAL MUSCLE EXERCISER

Yoav Ramon, 425 N. Edinburgh Ave., Los Angeles, Calif. 90048

Filed May 25, 1979, Ser. No. 42,460

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—95 **3 Claims**



1. An exerciser apparatus for enabling the exercising of facial muscles through movement of the jaws, said apparatus comprising:

(a) a first arm formed of a relatively thin flat band having a first end and a second end,

(b) a second arm formed of a relatively thin flat band having a first end corresponding to the first end of the first arm and a second end corresponding to the second end of the second arm,

(c) pivot means between said first and second arms at a pivot point located at the second ends of said arms, said first ends to be engaged by the teeth or gingiva of a user,

(d) a torque spring forming part of said pivot means connecting the second ends of said arms and being comprised of a plurality of 360° convolutions and each being comprised of a thin flat band configured to form the convolution, the end portion of the end convolutions being integral with the associated arms and which convolutions cause said arms to move in a first direction about the pivot means to an initial position when not engaged by the teeth or gingiva so that the first ends of the arms are capable of being biased in said first direction to a maximum separation created by the bias of said torque spring, and where the user attempts to move the arms away from the initial position in a second direction opposite to the first direction against the action of the torque spring by engaging the arms with the teeth or gingiva and squeezing them together thereby causing a torque force on the convolution of the spring tending to bias the arms back to the initial position,

(d) a first arcuate somewhat cup shaped engaging element located on the first end of one of said arms, said first somewhat cup shaped engaging element opening upwardly and having a shape similar to the upper jaw and teeth arrangement to be engaged by the upper teeth or gingiva, said first engaging element having a somewhat resilient pad in the first somewhat cup shaped portion to be engaged by the lower ends of the upper teeth and

(f) a second arcuate somewhat cup shaped engaging element located on the first end of the other of said arms, said second somewhat cup shaped engaging element opening downwardly and having a shape similar to the lower jaw and teeth arrangement to be engaged by the lower teeth or gingiva, said second engaging element having a somewhat resilient pad in the second somewhat cup shaped portion to be engaged by the upper ends of the lower teeth.

4,280,697

TENNIS TRAINING DEVICE

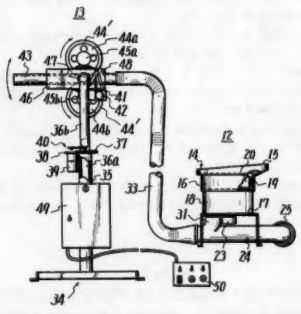
Sueto Yuasa, 5-9-10, Seta, Setagaya-ku, Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,783

Claims priority, application Japan, Nov. 30, 1978, 53-165190[U]

Int. Cl.³ A63B *69/00*

U.S. Cl. 273—29 A **6 Claims**



1. A tennis training device, comprising:

(a) ball emitting means including ball emitting cylinder and ball rotating means for cyclically emitting tennis balls to a player's side through said ball emitting cylinder;

(b) ball collecting means for collecting tennis balls hit by the player;

(c) ball transferring means for transferring said tennis balls collected by said ball collecting means to said ball emitting means one by one;

(d) control means for controlling horizontal and vertical angles of said ball emitting cylinder;

(e) a supporting base;

(f) a post vertically secured at its lower end to said supporting base and having a fixture plate at its top end;

(g) a crank member one end of which is rotatably received in the top end portion of said post and which is coupled to said fixture plate through a link; and

(h) a base plate to which said ball emitting means is secured and which is coupled to said crank member through a link.

4,280,698

GOLF CUP COVER AND PUTTING AID

Joseph Troiano, 80 Mahan St., West Babylon, N.Y. 11704

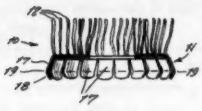
Filed Jul. 10, 1980, Ser. No. 168,310

Int. Cl.³ A63B *57/00*

U.S. Cl. 273—34 B **1 Claim**

1. A golf practice aid comprising a cover having a central aperture for passage therethrough of a golf ball, said central aperture being circular in shape and having a diameter slightly

larger than a golf ball; a plurality of fingers extending downwardly from the perimeter of the bottom surface of said cover, each of said plurality of fingers comprising a first portion projecting outwardly away from said perimeter and a second portion connected to said first portion and projecting inwardly toward the perimeter, said first and second portions meeting to form a sharp edge for bearing against the inner surface of a golf cup to hold said cover therein; a plurality of spurs extending from the perimeter of said cover, each of said plurality of spurs being positioned between two of said plurality of fingers, each said spur being coextensive and coplanar with said cover such



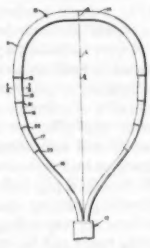
that an acute angle is formed between each said spur and a respective one of said plurality of fingers; said cover being of circular cross-section and said plurality of spurs and said plurality of fingers being mounted about said cover in circular alternating fashion; said plurality of fingers being flexible for tight fitting in a golf cup; and a quantity of simulated grass mounted on the top surface of said cover remote from said bottom surface, said quantity of simulated grass forming an opening at the center thereof for access to said central aperture of said cover, whereby said cover may be readily inserted in a golf cup in order to reduce the size of the hole to which a golf ball is stroked.

4,280,699

GAME RACQUET

Charles A. Drake, San Diego, Calif., assignor to Leach Industries, San Diego, Calif.

Filed Jan. 25, 1980, Ser. No. 115,780
Int. Cl.³ A63B 49/12
U.S. Cl. 273—73 C **8 Claims**



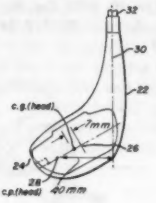
1. A game racquet comprising a substantially integral metal frame member shaped longitudinally to define a striking head outline and terminate in side by side opposite end handle incorporated portions, characterized in that the frame member has a symmetrical outer head region remote from the handle that is of substantially uniform size in cross section and the opposite sides of said frame member extending from opposite ends of said outer head region each comprise a plurality of stepped similarly incremental regions successively decreasing in size in cross section toward the handle, said regions all being of the same general shape.

4,280,700

GOLF CLUB AND GOLF CLUB SET

Stanley Plagenhoef, Amherst, Mass., assignor to Motion Analysis Inc., Amherst, Mass.

Filed Dec. 11, 1978, Ser. No. 968,204
Int. Cl.³ A63B 53/04, 53/12, 53/14
U.S. Cl. 273—77 A **26 Claims**



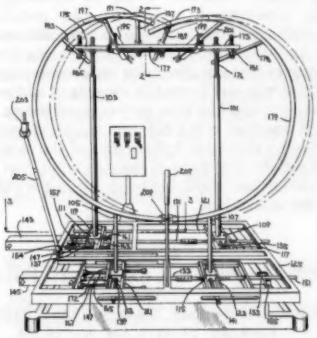
1. A golf club comprising a club head and shaft, said club head being weighted to locate its center of gravity toward the toe 7 mm (±2 mm) from the club face center and the club head center of percussion between the toe and center of gravity 40–60 mm (±2 mm) from the longitudinal axis of said shaft.

4,280,701

GOLF SWING TRAINING DEVICE

John Beckish, 228 W. Mitchell St., Milwaukee, Wis. 53207

Filed Jul. 11, 1980, Ser. No. 167,686
Int. Cl.³ A63B 69/36
U.S. Cl. 273—191 A **8 Claims**



1. A golf swing training device comprising:
(a) a base;
(b) an arcuate open ended ring having a foreswing end and a backswing end;
(c) post means for supporting the ring, said posts being mounted on the base for movement to the left and to the right;
(d) first actuator means for moving the ring to the left and to the right;
(e) second actuator means for moving the backswing end of the ring forward and backward;
(f) first sensing means, responsive to the presence of a golf club, for initiating the motion of the ring to the left;
(g) second sensing means, responsive to the leftward position of the ring, for initiating the motion of the backswing end of the ring;
(h) first timing means, responsive to the first sensing means, for timing the movement of the ring to the right and to the left; and
(i) second timing means, responsive to the second sensing

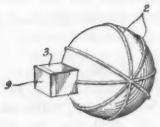
means, for timing the movement of the backswing end of the ring forward and backward.

4,280,702

GAMBLING AID

Raymond Tremblay, 1265 Rachel St., East, Apt. 107, Montreal, Canada

Filed Apr. 10, 1980, Ser. No. 138,961
Int. Cl.³ A63F 7/04
U.S. Cl. 273—144 B **4 Claims**



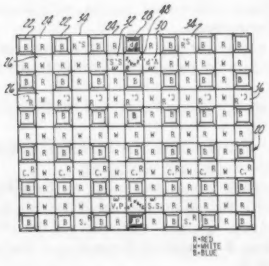
1. An aid for games of chance comprising a generally symmetrical hollow container having an outwardly extending generally symmetrical projection; said projection being formed with a first hole formed in its outer side and communicating with the interior of said container; being formed with a second hole of the same dimension and cross-sectional shape as the said first hole and located in one side of said projection at a right angle to said first hole; further comprising a plurality of balls, each inscribed with a different numerical symbol; further comprising an elongated hollow tube of the same cross-sectional dimension and shape as the two holes, said tube being open at the top and adapted to being inserted in either the first hole or the second hole.

4,280,703

THREE DIMENSIONAL GAME WITH POLITICAL THEME

Keith W. Slone, 13168 Plum, Southgate, Mich. 48195

Filed Sep. 27, 1979, Ser. No. 79,379
Int. Cl.³ A63F 3/00
U.S. Cl. 273—241 **6 Claims**



1. A board game to be played by two persons, said board game comprising:

(a) a board having a single, continuous playing surface thereon, said playing surface having a plurality of squares, said plurality of squares having three different designated colors, one of said three different designated colored plurality of squares further being elevated above the plane of the surface of the second and the third of said three different designated colored plurality of squares, the plane of the surface of the second and the third of said three different designated colored plurality of squares further being on the same plane, such that no part of an elevated square is positioned above another square; and

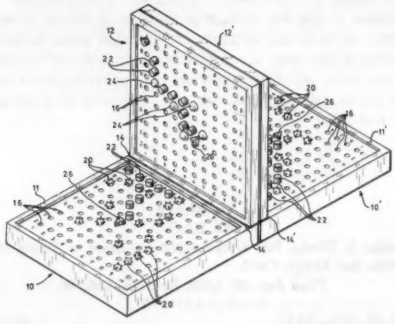
(b) a set of game pieces disposed on said playing surface, each of said set of game pieces having identifying designation thereon and being divided into two equal groups, said identifying designation on each of said set of game pieces further being used to determine the varying capabilities of movement of each of said set of game pieces over said three different designated colored plurality of squares of the game board.

4,280,704

METHOD FOR PLAYING A MILITARY WARFARE BOARD GAME

Gerald G. Massimei, and Gerald G. Massimei, Jr., both of 515 Broadway, Bethpage, N.Y. 11714

Continuation of Ser. No. 904,959, May 11, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,212
Int. Cl.³ A63F 3/00
U.S. Cl. 273—258 **4 Claims**



1. A method of playing a naval warfare board game for at least two players of the type which includes a pair of pegboard grids for each of the players including an offensive tracking grid and a defensive network grid, each of which has defined on a face thereof a multiplicity of peg holes defining playing spaces arranged in a plurality of columns and rows, with each of said playing spaces of said offensive tracking grid being positioned in a column and row corresponding to the column and row of a playing space on said defensive network grid, and with each of said grids having a peg hole defining a starting playing space and a finishing playing space which are positioned in a column and row corresponding to the column and row of the starting playing space and finishing playing space of the other grid, one primary first token for each of the players, representing the player's fleet of ships, a multiplicity of auxiliary first tokens for each of the players, one primary second token for each of the players, representing the opposing player's fleet of ships, a multiplicity of auxiliary second tokens for each of the players, a plurality of third tokens for each of said players representing a mine for sinking one of the ships of the opposing player's fleet, and a plurality of fourth tokens for each of the players, representing at least a partial loss of the player's fleet and a mined defensive position held by the opposing player, the steps comprising:

each of said players initially inserting said plurality of third tokens representing their defensive forces in the peg holes

on their defensive network grid in any desired arrangement except those peg holes representing said starting and finishing spaces and such that at least one continuous and uninterrupted path defined by adjacent playing spaces of the defensive network grid is maintained between said starting and finishing spaces thereof;

each of said players inserting their primary first and second tokens in the peg holes representing said starting spaces of their offensive and defensive network grids, respectively;

each of said players, in successive alternating turns, moving one's primary first token from said starting space peg hole to an adjacent playing space peg hole, and for each successive turn, from one playing space peg hole in which it was previously positioned to an adjacent playing space peg hole on the player's offensive tracking grid in an attempt to move said primary first token along a desired path to said peg hole representing said finishing space;

each of said players moving one's primary second token from one playing space peg hole in which it was previously positioned to an adjacent playing space peg hole on the defensive network grid in direct relationship to the movement of the primary first token on the opposing party's tracking grid;

each of said players repositioning one's primary first token on said tracking grid in a playing space peg hole it was previously positioned, when said player's primary first token lands on a playing space of said tracking grid which corresponds in row and column to a playing space on the opposing player's defensive network grid on which a third token of the opposing player is positioned;

each of said players inserting one of their fourth tokens in said playing space peg hole of said tracking grid which corresponds in row and column to said playing space peg hole on the opposing player's defensive network grid in which said third token of the opposing player is positioned in substitution of said first token which is repositioned in said playing space peg hole it was previously positioned;

each of said players inserting one of said auxiliary first tokens in a playing space peg hole of said offensive tracking grid in which said primary first token was previously positioned so as to permit charting of the path of the player's offensive forces; and

each of said players placing one of said auxiliary second tokens in one of the playing space peg holes of the player's defensive network grid in which the player's primary second token was previously positioned so as to permit charting of the path of the opposing player's offensive forces.

4,280,705

RECORD PLAYER

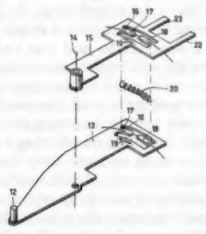
Kurt Eisemann, and Jürgen Montag, both of Berlin, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,365

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848393

Int. Cl.³ G11B *17/06*

U.S. Cl. 369—233 **4 Claims**



1. A record player comprising a pick-up arm (5), a command disk (8) for controlling the position of the pick-up arm, an overload coupling (21) arranged between the pick-up arm and the command disk, which coupling comprises two coupling members (13, 15) which are pivotable relative to each other about a common axis (14) against spring force starting from a neutral position, a first of said coupling members (13) cooperating with the command disk and the second coupling member (15) cooperating with the pick-up arm, characterized in that each coupling member (13, 15) comprises a guide (17, 18) which is concentrically curved about the common axis, in the neutral position the guides of the coupling members coinciding as viewed parallel to the axis (14), and the overload coupling further comprising a continuous helical spring (20) slid over the guides, in the neutral position respective ends of the springs bearing against end portions of the guides.

4,280,706

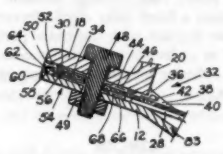
SEAL FOR FLUIDIZING OUTLET

Frederick E. Vorwerk, St. Peters, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,343

Int. Cl.³ B61D *7/22*; F16J *15/06, 15/40*

U.S. Cl. 277—12 **20 Claims**



1. An outlet seal comprising: a seal located between an outlet mounting flange and a hopper mounting flange; said seal extending inboard of an inner hopper wall and including a projection extending upwardly which engages said hopper wall; said seal further including a tapered portion which extends inwardly and downwardly from said projection, whereby lading and pressure in the outlet act to urge the projection into engagement with the vertical wall and said tapered portion into engagement with a supporting surface.

4,280,707

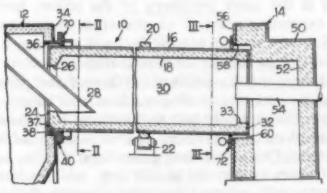
SEAL FOR ROTATING CYLINDER SUCH AS KILNS AND THE LIKE

Robert M. Bliemeister, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 10,674, Feb. 9, 1979, abandoned. This application Jul. 29, 1980, Ser. No. 173,499

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—84 **1 Claim**



1. Apparatus comprising in combination a stationary member and a rotating cylinder telescopically arranged in said stationary member with said cylinder coacting with said stationary member to define an annular opening therebetween disposed in circumscribing relationship to said cylinder, and a seal circumscribing said cylinder adjacent said stationary mem-

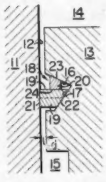
ber and closing said annular opening, said seal comprising an annular ring member formed by a plurality of pivotally connected ring segments and having a narrow inner circular edge portion adapted to reset on and make loose contact with the outer periphery of said cylinder and having a flat annular surface extending radially outwardly from said edge portion and adapted to engage said stationary member to close said annular opening, weighted means extending axially away from a back side of said ring opposite said annular surface, said weighted means extending from a location on said back side that is radially outward of said inner edge portion and providing together with the weight of said ring a center of mass axially backward of said edge portion for tilting said ring whereupon said tilting and the rotation of said cylinder moves said ring member into engagement with said stationary member to substantially seal said annular opening, wherein the improvement comprises at least one of said segments having a rigid arcuate length extending and adjusting means engaging at least one portion of said ring segment, threaded bolting means engaging said portion of said ring segment and projecting through said adjusting means, and threaded fastening means engaging the threaded projecting end of the bolting means and securely clamping said adjusting means to the ring segment in a fixed position of the adjusting means relative to the ring segment, whereby the inner circumferential dimension of the segment and the entire ring member is made adjustable to provide and maintain a fixed inner circumferential dimension providing the loose contact with the outer periphery of said cylinder required in order that the ring member may move axially along the cylinder into sealing engagement with the stationary member.

4,280,708

SEALING DEVICE FOR ENGINE PISTON

Yoshio Arai, 1400, Kamihongo, Matsudo-shi, Chiba-ken, Japan

Filed Aug. 8, 1979, Ser. No. 64,794
Claims priority, application Japan, Aug. 21, 1978, 53-101678
Int. Cl.³ F16J *9/20*
U.S. Cl. 277—171 **2 Claims**



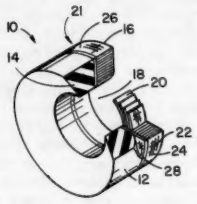
1. A sealing device for reciprocating type pistons of engines in which the piston has a piston ring installed into the piston-ring groove and is slidably fitted in the cylinder bore of the cylinder block, said sealing device comprising: a piston-ring groove cut in the outer periphery of the piston, having an outwardly expanding nearly V-shaped cross section and consisting of first and second annular inclined surfaces; a piston ring consisting of an annular inclined surface that abuts tightly against said first annular inclined surface of the piston-ring groove and an external sealing surface that abuts tightly against the cylinder wall; and an auxiliary ring having an annular inclined surface that bears against said second annular inclined surface of the piston-ring groove and also having a flat surface that bears against the piston ring, said auxiliary ring having a tendency to contract inwardly; whereby the auxiliary ring slides downwardly along the second annular inclined surface to cause the annular inclined surface of the piston ring to bear tightly against and slide outwardly along the first annular inclined surface of the piston-ring groove so that the external sealing surface of the piston ring is forced tightly against the cylinder wall.

4,280,709

PISTON RUBBER

George E. Heikes, Jr., and Claude L. Henderson, both of Denver, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Nov. 8, 1979, Ser. No. 92,406
Int. Cl.³ F16J *9/00, 15/20*
U.S. Cl. 277—229 **8 Claims**



1. In a piston rubber of the type having a generally cylindrical body of a desired length with an axial bore, a longitudinal axis, a cylindrical surface portion, a lip-seal end and a reinforced end with an embedded fabric reinforcement, the improvement in the reinforcement comprising:

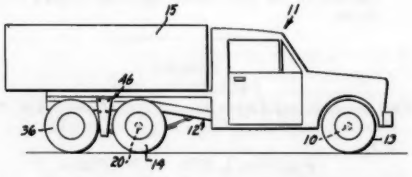
a strip of textile fabric wound over itself into a volute roll that is arranged generally coaxial with the cylindrical body, the fabric having sets of crossing warp and fill threads with side surface portions where one of the sets has threads substantially circumferentially oriented in relation to the cylindrical body and the other set has threads oriented generally with the longitudinal axis of the body so that side surface portions thereof are juxtaposed the cylindrical surface portion of the body to define a wear-resistant surface.

4,280,710

THIRD AXLE ATTACHMENT FOR MOTOR VEHICLES

Gail E. Rogge, 41750 Shady La., Hemet, Calif. 92343

Filed May 11, 1979, Ser. No. 38,333
Int. Cl.³ B60G *5/00*
U.S. Cl. 280—81 R **6 Claims**



2. A third axle attachment for a vehicle having a chassis frame, a rear axle, spring means for supporting said frame from said rear axle, and spring mounting means for attaching said spring means to said rear axle, comprising:

an auxiliary leaf spring having mounted means at its forward end for pivotal connection to said rear axle for vertical movement therewith and further mounting means at its rearward end for connection to the axle of a third axle attachment for vertical movement therewith;

load transferring means having mounting means for attachment to said chassis frame for transferring a portion of the load from said frame to said auxiliary leaf spring at a location intermediate the ends of said auxiliary leaf spring;

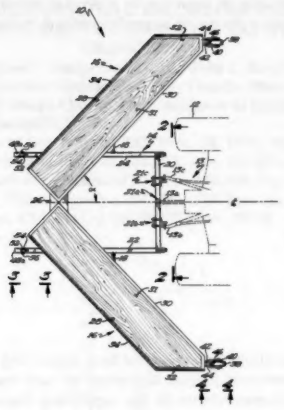
the geometry and loading of said third axle attachment being selected to normally maintain the wheels of the third axle in contact with the ground during all static load conditions.

4,280,711

PERSONNEL CARRIER FOR WEED CONTROL

Paul R. Gorder, Rte. 1, Box 88, Wahpeton, N. Dak. 58075

Filed Jan. 2, 1979, Ser. No. 266
Int. Cl.³ A01D *67/04*
U.S. Cl. 280—32.5 **10 Claims**



1. A personnel carrier adapted to be attached to a vehicle for carrying workers through fields in order to perform crop and/or weed control operations, comprising:

a main frame having means thereon for attachment to a vehicle for conveying said frame through a field;

ground engaging skid means supporting said frame for transit;

a pair of wing sections having platform means thereon for carrying workers, said wing sections having inner end segments supported on said main frame and said wing sections projecting horizontally outwardly from said inner end segments on opposite sides of said main frame at an angle of between 20° and 70° with respect to the longitudinal axis of said main frame, said platform means being spaced from the ground so as to allow weed control operations to be performed therefrom; and

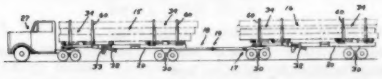
ground engaging wheel means on each of said wing sections at locations thereon spaced laterally outwardly from said main frame.

4,280,712

TRAILERS FOR HAULING LOGS AND THE LIKE AND ADAPTED FOR USE IN TANDEM

Randall N. Clark, P.O. Box 185, Union, Me. 04862

Filed Apr. 2, 1979, Ser. No. 25,837
Int. Cl.³ B62D *3/10*
U.S. Cl. 280—144 **14 Claims**



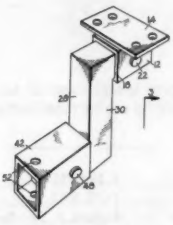
1. A trailer for hauling logs and other long materials, said trailer includes a frame, at least one bunk including two bunk members, means pivotally connecting said members to said frame for movement in a horizontal plane, each member of a length greater than the maximum width of said trailer and including a stake at each of its ends, and means operable to pivot said members between first and second positions, in said first position, each stake spaced from the longitudinal center line of the trailer a distance not more than one-half of said maximum width and in said second position, each stake spaced a predetermined distance from said center line greater than said one-half of said maximum width thus to enable said trailer to accommodate a wider load than when said members are in their first positions, and shoulder plates extending outwardly from the sides of the frame, each shoulder plate in support of a substantial outer portion of a pivotable member when in said second position.

4,280,713

TRAILER HITCH

Larry C. Bruhn, Springfield, Oreg., assignor to LBF Properties, Inc., Springfield, Oreg.

Filed Mar. 15, 1979, Ser. No. 21,168
Int. Cl.³ B60D *1/06*
U.S. Cl. 280—415 A **3 Claims**



1. A trailer hitch comprising

(a) a first body member of tubular shape having an open rearward end to provide a socket within said first body member,

(b) means on said first body member arranged to secure it to a vehicle,

(c) a second body member of tubular shape having defining side portions and having an open forward end to provide a socket within said second body member,

(d) two or more hitch coupler means on different side portions of said second body member arranged one at a time to provide a connection with a vehicle to be towed,

(e) a neck portion having opposite end portions one of which is arrranged to project into and fit snugly within said socket formed by said first body member and the other of which is arranged to project into and fit snugly within said socket formed by said second body member,

(f) removable connecting means on one end of said neck portion and on said first body member removably connecting said neck portion in said first body member,

(g) and removable connecting means on the other end of said neck portion and on said second body member removably connecting said neck portion in said second body portion,

(h) said connecting means on said other end of said neck portion and on said body member providing two or more rotated positions of said second body member on said neck portion for using a selected one of said hitch coupler means at a time.

4,280,714

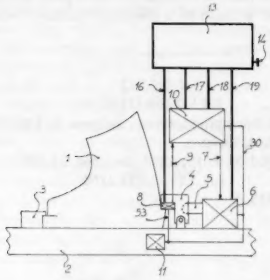
SAFETY BINDINGS FOR SKIS

Georges P. J. Salomon, Annecy, France, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France

Continuation of Ser. No. 845,456, Oct. 25, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,425
Claims priority, application France, Nov. 4, 1976, 76 33218
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—611 **9 Claims**

1. A safety binding for a ski comprising: at least one main electrical circuit for producing signals during skiing to detect and calculate stress on the binding and to control the release of the binding in dependence upon the stress, and being further defined by at least one voluntary operated additional circuit operated by a switch and including warning means and em-

ploying active circuit elements for generating an electrical signal at at least one point in said main circuit, and actuating the warning means for warning of the state of the binding, said



electrical signal being independent of said signals produced during skiing, to thereby enable monitoring of the condition of said binding.

4,280,715

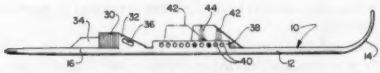
TOY SKI

Israel R. Freelander, and Michael S. Freelander, both of Spring Valley Dr., Worcester, Mass. 01609

Filed Jan. 2, 1979, Ser. No. 580

Int. Cl.[3] A63C *5/00, 9/00*

U.S. Cl. 280—623 **4 Claims**



1. A toy ski comprising a longitudinally oriented body portion having a generally planar upper surface section adapted to receive the foot of a skier, a heel rest rigidly fixed to said body portion and upstanding therefrom and positioned adjacent to the rear of said foot receiving section, a toe clamp for receipt of the toe portion of the foot of the skier disposed forwardly of said heel rest and adjacent to forward portions of said foot receiving section, means for mounting said toe clamp on said body portion for longitudinal reciprocal adjustment relative to said heel rest, said mounting means including laterally spaced side bars upstanding from said body portion disposed forwardly of said heel rest, said side bars each having a plurality of longitudinally spaced, laterally directed openings adapted to receive at least one projection laterally extending from opposite sides of said toe clamp, said toe clamp of generally shell-like configuration, a flange laterally outwardly extending from the opposite sides of said toe clamp and terminating in an upwardly extending wall, said projections outwardly extending from said walls.

4,280,716

FOLDABLE WHEEL CHAIR

Ebbe Vonsbaek, Roskilde; Claus C. Hansen, and Lene Munthe, both of Copenhagen, all of Denmark, assignors to E.C.-Hospitalsinventor A/S, Denmark

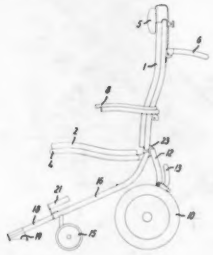
Filed Feb. 4, 1980, Ser. No. 118,210

Claims priority, application Denmark, Feb. 5, 1979, 476/79

Int. Cl.[3] B62B *7/06*

U.S. Cl. 280—642 **7 Claims**

1. A foldable wheel chair, comprising a back and a seat of a formstable, non-flexible material, two wheel pairs, at least three individual supporting frames for said back, said seat and said wheel pairs and two identical pivot assemblies positioned opposite each other at the back-seat junction for pivotally connecting said supporting frames relative to each other around pivot axes extending in parallel relationship to a shaft for one of said wheel pairs, and including a blocking mechanism for interlocking engagement of the seat and back supporting frames with the supporting frame or frames for said wheel pairs in the normal operative state of the chair, said blocking mechanism including means for releasing said interlocking engagement only in response to a pivotal movement of said seat supporting frame to a predetermined reduction of the



angular separation of said seat and back supporting frames, and to allow combined pivotal movement of said seat and back supporting frames relative to the supporting frame or frames for said wheel pairs in a direction opposite to the preceding pivotal release movement of said seat supporting frame, parts of said pivot assemblies connected with said seat supporting frame being rigidly connected with each other to syncronize the pivotal movements of the two pivot assemblies.

4,280,717

SUSPENSION ARM MOUNTING

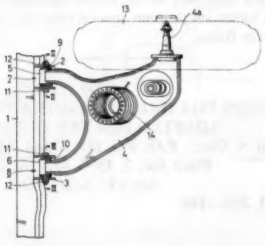
Kiyoshi Hanai, and Takeo Kondo, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 21, 1979, Ser. No. 41,197

Claims priority, application Japan, May 24, 1978, 53-71030[U]

Int. Cl.[3] B60G *7/02*

U.S. Cl. 280—663 **6 Claims**



1. A trailing arm suspension comprising:

a suspension arm having an inner connecting portion and an outer connecting portion; and

a suspension member to which said suspension arm is connected at said inner and outer connecting portions;

each of said connecting portions comprising a sleeve and a horizontally oriented bush received in said sleeve, each said bush comprising an inner cylinder, an outer cylinder and a cylindrical vibration damping member interposed between said inner and outer cylinders, said inner cylinder being connected to said suspension member by a bolt, said outer cylinder being retained by said sleeve;

said vibration damping member of said bush in said outer connecting portion being designed to cause a smaller

deflection than said vibration damping member of said bush in said inner connecting portion when an equal amount of load is radially applied to said vibration damping members.

4,280,718

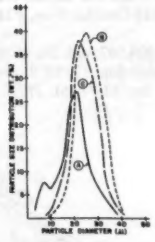
PRESSURE SENSITIVE RECORDING SHEET CONTAINING SIZE CLASSIFIED CEREAL STARCH GRANULES

Donald L. Johnson, Macon County, Ill.; John L. Bond, Franklin County, Ohio; Saul Rogols, Pickaway County, Ohio, and John W. Salter, Franklin County, Ohio, assignors to Henkel Corporation, Minneapolis, Minn.

Continuation of Ser. No. 561,733, Mar. 24, 1975, abandoned, which is a division of Ser. No. 478,563, Jun. 12, 1974, Pat. No. 3,951,948, which is a division of Ser. No. 180,588, Sep. 15, 1971, abandoned. This application Jul. 24, 1979, Ser. No. 60,162

Int. Cl.³ B41L *1/36;* B32B *5/16, 29/04*

U.S. Cl. 282—27.5 **14 Claims**



11. In a carbonless duplicating paper including a coated surface containing chromogenic micro-capsules and protective particles therefor, said protective particles comprising size classified large granules obtained by wet process from a cereal starch originally having a bimodal particle size distribution, said starch being selected from the group consisting of wheat, barley and rye starches, said size classified large granules having 99% by weight above 12 microns in size and having at least about 22% of the total number thereof at least 22 microns in size, and said large granules having a sub-sieve value substantially greater than that of the prime grade, bimodal cereal starch from which it is derived.

4,280,719

CONNECTOR WITH ROTATABLE LOCKING RING, PARTICULARLY FOR A RISER USED IN OFFSHORE OIL EXPLORATION AND PRODUCTION

Edmond Daniel, Saulx-les-Chartreu; Jean Guesnon, Saint-Germain-en-Laye, and Andre Laurencin, Lyons, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

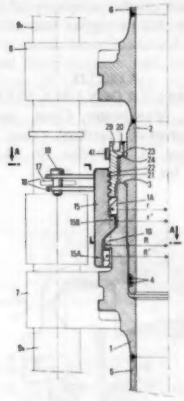
Filed Aug. 3, 1979, Ser. No. 63,659

Claims priority, application France, Aug. 3, 1978, 78 23209

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—90 **11 Claims**

1. A connector with a rotatable locking ring comprising two interlocking tubular elements each having axial abutment means, a locking ring adapted for being inserted into a first of said tubular elements to form therewith a bayonet assembly said locking ring and said first tubular element having lugs wherein said lugs of said ring co-operate with corresponding lugs of said first tubular element, and means bearing on said second tubular element to exert in the axial direction, through said lugs of said locking ring, a prestress urging said tubular elements against each other, said lugs of said first tubular element and said lugs of said locking ring each comprising two lug rows angularly staggered with respect to each other, said lugs being inscribed in respective cylindrical surfaces of different radii, so that in the inserted position in said ring of said first tubular element, the respective lugs can slide effortlessly on one another up to a position where the lugs of each lug row of



said locking ring pass between those of a corresponding row of said first tubular element to form a plurality of bayonet couplings which can be simultaneously locked.

4,280,720

HORIZONTALLY DEVELOPING MULTI-FUNCTIONS ROTATING CONNECTION

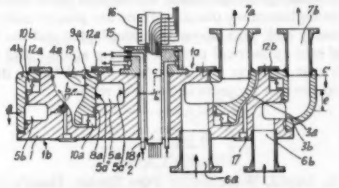
Herve Lomenech, and Jean-Paul Sarrailh, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Jul. 26, 1978, Ser. No. 928,083

Claims priority, application France, Aug. 4, 1977, 77 24045; Jun. 26, 1978, 78 19015

Int. Cl.³ F16L *39/04*

U.S. Cl. 285—136 **6 Claims**



1. A rotating connection device for a plurality of conduits, comprising

a fixed part constituted by a disc limited by a lower face and an upper face, each of said faces having a common axis of revolution,

at least two parts able to move rotatingly around said common axis of revolution,

said rotating connection being characterized in that

each movable part is located within an annular groove cut out of the fixed part, said groove having an annular opening through the upper face of said fixed part for upward removal of the movable part,

each movable part forming a single annular space with the fixed part, said movable part isolating said said annular space from said groove and from any other annular spaces by at least two annular sealing gaskets, said annular space being moreover defined by a surface on the movable part and by a surface on the fixed part,

each said surface having an aperture for the transfer of fluids, a first aperture opening through said surface of the

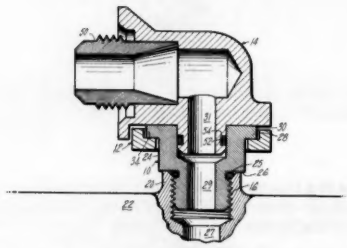
fixed part and connected by a passage in the fixed part to a conduit open on the lower surface of the fixed part, a second aperture opening through said surface of the movable part and connected by a passage in the movable part to a conduit open on the periphery of the movable part and directed towards the upper face of the fixed part.

4,280,721

ANGULARLY LOCKABLE FITTING

Norman W. Narkon, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1979, Ser. No. 94,254
Int. Cl.³ F16L *43/00*
U.S. Cl. 285—179 **6 Claims**



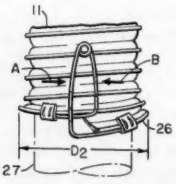
1. A fitting including an elbow adapted to connect to plumbing and rotatable about a central axis for alignment with the mating end of said plumbing, an adapter secured to a casing internally communicating with said plumbing, said adapter having a cylindrical body and a larger diameter cylindrical portion at its upper end extending beyond said body, said cylindrical portion having a top planar surface, the bottom of said elbow having a complimentary planar surface lying normal to said central axis, a collar having a recess having a bottom wall receiving said cylindrical portion and in rotating relation therewith, said elbow having an integral radially extending flange lying in the same plane as said complimentary planar surface complimenting said collar, means for retractably securing said flange to said collar so that said top planar surface and said complimentary planar surface are placed into contact to frictionally lock said elbow to said adapter and the bottom surface of said cylindrical portion bearing against said bottom wall such that said top planar surface of said larger diameter cylindrical portion projects above said recess.

4,280,722

HOSE CLAMP

Richard A. Guptil, Waynesville; Ivan Gaster, Hazelwood, and Roger D. Meadows, Waynesville, all of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Aug. 10, 1979, Ser. No. 65,400
Int. Cl.³ F16L *33/00, 47/00, 49/00*
U.S. Cl. 285—244 **9 Claims**



1. In combination, a flexible hose of nominal diameter having a reinforcing member comprising a plurality of longitudinally spaced turns of a continuous helically wound coil and a cover tube, and a clamp, said clamp being a continuous wire member having one end thereof secured to the endmost turn of said coil and the other end thereof secured to the adjacent turn of said coil, said clamp having means to maintain said hose end at said nominal diameter, and portions of said clamp being adapted for motion relative to each other to move apart said ends of said wire of said clamp secured to said turns of said coil and to radially expand said hose end.

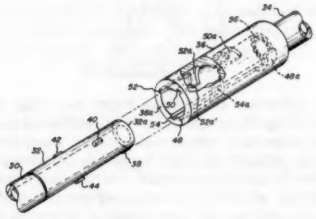
2. In combination, a flexible hose of nominal diameter having a reinforcing member comprising a plurality of longitudinally spaced annular rings and a cover tube, the endmost ring of said hose having a gap, and a clamp, said clamp being a continuous wire member, the ends of said clamp being secured to said endmost ring at opposte sides of said gap, said clamp having means to maintain said hose end at said nominal diameter, portions of said clamp being adapted for motion relative to each other to move apart said ends of said wire of said clamp secured to said endmost ring at opposite sides of said gap and to radially expand said hose end.

4,280,723

SAFETY DEVICE FOR HOSE CONNECTIONS

Jon P. Moldestad, 1015 Cadillac Way, #213, Burlingame, Calif. 94010

Division of Ser. No. 928,097, Jul. 26, 1978, Pat. No. 4,211,439.
This application Sep. 17, 1979, Ser. No. 76,221
Int. Cl.³ F16L *21/02*
U.S. Cl. 285—376 **3 Claims**



1. In a fluid handling system having a first and second fluid line for handling the fluids, the improvement comprising:

a first essentially cylindrical connector connected to the first fluid line, the first connector having an outer surface and having a fluid passage therethrough;

a second essentially cylindrical connector connected to the second fluid line, the second connector having a fluid passage therethrough and having an inner surface defining an opening therein for receiving the first connector;

a plurality of keys circumferentially and axially spaced on the outer surface of the first connector, the circumferential and axial positions of the keys forming a first pattern indicative of characteristics of fluids which may be safely carried by the first fluid line;

a plurality of circumferentially spaced axially extending keyways of different length in the inner surface of the second connector;

a plurality of axially spaced circumferentially extending keyways in the inner surface of the second connector, the circumferentially extending keyways intersecting with the axially extending keyways and extending only a portion of the entire circumference of the inner surface;

wherein the circumferential positions of the axially extending keyways and the axial positions of the circumferentially extending keyways form a second pattern indicative of characteristics of fluids which may be safely carried by the second line;

wherein connection of the first and second fluid lines is provided by inserting the first connector into the opening in the second connector until the plurality of keys reach the intersection of the axial and circumferential keyways,

and turning the first and second connectors circumferentially with respect to one another to move the plurality of keys into the plurality of circumferentially extending keyways; and

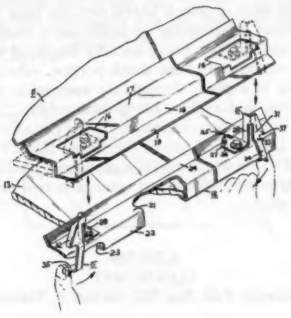
wherein engagement of the first and second connectors is not possible unless the first pattern formed by the keys and the second pattern formed by the keyways match one another in a complimentary manner sufficiently to indicate compatibility of the first and second fluid lines.

4,280,724

SPRING LATCH

John Dalton, Yardley, Pa., assignor to Keystone Lighting Corp., Bristol, Pa.

Filed Jun. 15, 1979, Ser. No. 66,872
Int. Cl.³ E05C *19/06*
U.S. Cl. 292—87 **9 Claims**



1. A spring latch comprising in combination,

(a) a base plate for securement to a portion of the item to be releasably secured by the latch,

(b) means for securing said base plate to the said item to be releasably secured,

(c) a resilient leg connected to and extending substantially orthogonally in a first direction from the plane of said base plate and being resiliently deflectable toward and away from overlying relationship to said base plate,

(d) a non-resilient leg connected at one end to the end of said resilient leg which is remote from said base plate and extending in a second direction opposite to said first direction through the plane of said base plate and terminating therebeyond in a manually engageable actuator,

(e) a latching element carried by said non-resilient leg

at a point intermediate the ends thereof, whereby, said actuator is actuatable to move said non-resilient leg and said latching element carried thereby transversely to said base plate and thereby resiliently deflect said resilient leg, release of said actuator causing reverse movement of said non-resilient leg and latching element with respect to said base plate through the resilient counter deflection action of said resilient leg.

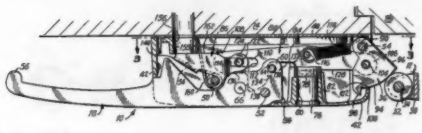
4,280,725

SAFETY CLOSURE SYSTEM

Irving L. Berkowitz, Binghamton, and John J. Bourgeois, Kirkwood, both of N.Y., assignors to Kason Hardware Corporation, Binghamton, N.Y.

Division of Ser. No. 814,408, Jul. 11, 1977. This application Feb. 6, 1979, Ser. No. 9,768
Int. Cl.³ E05C *3/22*
U.S. Cl. 292—223 **3 Claims**

1. A safety latch assembly for use with enclosures or the like, comprising, in combination: a housing; a handle carried by said housing and movable between locking and unlocking positions; a keeper member carried by said housing and having portions thereof remote from said handle and normally movable into and out of a predetermined path of interference with strike means as a result of said handle movement; a lever member supported within said housing and being movable between locking and unlocking positions, and link means disposed within said housing for interconnecting said lever and keeper members, said link means being movable between locking and unlocking positions under the influence of said handle and said lever member, said lever member and said link means being responsive to forces of an actuating member moved from within said enclosure and without the influence of said handle for moving said link means from said locking position to said unlocking position, thereby removing said keeper member portions from said path of interference; means for biasing said



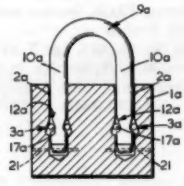
link means and lever member toward their respective locking positions; and lock means for preventing said handle movement, said latch assembly further comprising padlock means for receiving a padlock for preventing said handle movement, a key-operated locking assembly including a portion thereof movable into the path of said unlocking movement of a portion of said link means to prevent influencing of said keeper member by said handle when in a locked position, said keeper member portions being movable from said path of interference in response to forces of said actuating member notwithstanding either the presence of a padlock in said padlock means or the presence of said locking assembly portions in said unlocking movement path or both.

4,280,726

KEYLESS LOCKABLE SECURITY DEVICES

John McCoag, Glasgow, Scotland, assignor to Aardee Spring & Lock Company Limited, Glasgow, Scotland

Filed May 15, 1979, Ser. No. 39,415
Claims priority, application United Kingdom, May 17, 1978, 20255/78
Int. Cl.³ E05C *13/02*; F16B *19/00*
U.S. Cl. 292—327 **8 Claims**



1. A keyless lockable security device comprising a body member having at last one blind bore therein, said bore having an annular recessed portion intermediate its ends, in cross section the recessed portion has an inclined side surface extending from the bottom of the recess to the edge at one sie in the direction of the open end of the bore and the opposite side surface is concave from the bottom of the recess to the other edge, a male member having at least one limb insertable in its respective blind bore, said limb having an annular recessed portion adjacent a free end thereof, in cross-section the recessed portion of the limb has an inclined side surface extending from the bottom of the recess to one edge and an opposite concave side surface extending from the bottom of the recess to the other edge, an annular member of spring steel, split

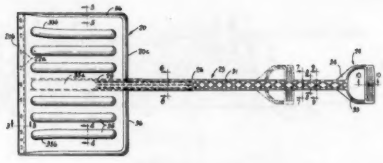
cross-sectionally in the form of a C-ring, is located in the annular recessed portion of its respective blind bore for engagement in the annular recessed portion of its associated limb when the limb is inserted into its respective blind bore to prevent withdrawal of the limb from the bore.

4,280,727

INJECTION MOLDED SNOW SHOVEL

Robert A. Germain, Ashtabula, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Oct. 10, 1979, Ser. No. 83,260
Int. Cl.³ E01H *5/02*
U.S. Cl. 294—54 **6 Claims**



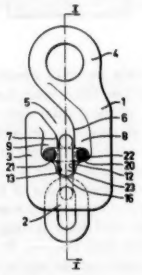
1. A unitary snow shovel scoop with operative handle, comprising a generally planar rectangular scoop having a transverse linear leading edge opposite a handle-attached edge, a bifurcated reinforcement strip extending the entire length of said leading edge, a coacting flat linear metal strip firmly secured in the bifurcation of said reinforcement strip and extending beyond the front edge of said reinforcement strip, and a generally cylindrical hollow handle stem structure extending centrally of said scoop at right angles to said leading edge from a point on said scoop to a position on said handle stem for a handle grip spaced from said handle-attached edge, said hollow handle stem structure being integral with said scoop, said handle stem structure decreasing in diameter continuously and regularly for a length from a point a few inches inside of said handle-attached edge outwardly to said handle grip by an amount of draft permitting a forming core extending through said length to be removed longitudinally of said handle stem from said scoop end, and the hollow portion of said handle stem being cylindrical and having spaced longitudinally extending short reinforcing projections extending throughout said length.

4,280,728

GRAB HOOK

Lars O. A. Fredriksson, Växjö, Sweden, assignor to K A Bergs Smide AB, Gemla, Sweden

Continuation of Ser. No. 894,483, Apr. 7, 1978. This application Nov. 20, 1979, Ser. No. 95,949
Claims priority, application Sweden, Apr. 20, 1977, 7704493
Int. Cl.³ B64D *17/38*
U.S. Cl. 294—78 R **5 Claims**



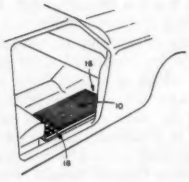
1. Grab hook for connection to a chain, the hook being unsymmetrical and comprising a shank portion with a suspension end, a point portion and a bridge portion interconnecting said shank portion with said point portion and together with said shank and point portions defining an elongated introduction opening, said opening having an open end for receiving a chain link and an inner closed end defined by the bridge portion, said opening having two mutually substantially parallel edge surfaces defined by the shank portion and the point portion, respectively, each of said edge surfaces having an arcuate configuration with one end directed substantially towards the suspension end of the hook and its other end directed substantially towards the bridge portion, each of said shank portion and said bridge portion having a three-dimensional, laterial surface which is arcuate in cross section and extends from the respective edge surface of the introduction opening along the major portion of the extension of the edge surfaces and diverges from said respective edge surfaces of the introduction opening, in sectional planes perpendicular to the introduction opening and each of which lateral surfaces ends in a support shelf extending substantially perpendicularly from said opening, said bridge portion being laterally displaced with respect to the suspension end of the shank portion, substantially perpendicularly to a plane through the suspension end and the point portion, said shelves being substantially coplanar and adapted to support two mutually opposite portions of the same chain link and located above the upper side of the bridge portion and above said closed end of the introduction opening, which is three-dimensional and extends in two mutually perpendicular planes.

4,280,729

FLOOR MAT

Janusz Morawski, P.O. Box 562, Station P, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 904,772, May 11, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 72,113
Int. Cl.³ B60N *3/04*
U.S. Cl. 296—1 F **10 Claims**



1. A two-level floor mat for horizontal floors such as floors in motor vehicles, and comprising;

a tread portion having a longitudinal axis and having a plurality of longitudinal grooves therein parallel to such axis such grooves defining a predetermined water level for flow of water therealong;

pad means under said tread portion having a lower surface adapted to lie horizontal on said horizontal floor and locating said tread portion and said grooves at a predetermined level raised above the horizontal floor;

water collector means located at one end of said tread portion with said grooves in water flow communication therewith, said collector means having a bottom wall portion lying at a second predetermined level below the level of said tread portion and said grooves whereby water flowing along said grooves will flow downwardly into said collector means and collect therein, and, will not subsequently readily flow forwardly into said grooves, and,

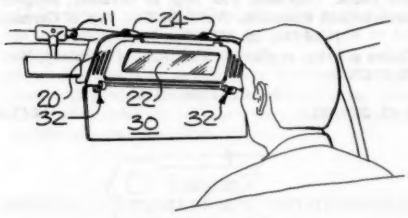
an undersurface forming part of said bottom wall portion and lying on said floor co-planar with said lower surface of said pad means whereby in use on said horizontal floor, said tread portion, and said collector means both are supported horizontal, but in different planes.

4,280,730

GLARE SHIELD FOR VEHICLE SUN VISOR

Joseph D. Turner, Statesville, N.C., assignor to Sun Visors, Inc., Mooresville, N.C.

Continuation-in-part of Ser. No. 770,806, Feb. 22, 1977, abandoned. This application Aug. 16, 1979, Ser. No. 66,913
Int. Cl.[3] B60J *3/02*
U.S. Cl. 296—97 G 6 Claims



1. A glare shield for attachment to a vehicle sun visor of the type including a non-transparent rectangular panel hingedly connected along one edge adjacent the juncture of the vehicle roof and the windshield so that said sun visor may be moved between a stored position with one side adjacent the roof of the vehicle and an operative position with said sun visor wholly or partly in the line of vision of a person seated in said vehicle, said glare shield comprising

(a) a first rectangular panel having a length generally corresponding to the length of said sun visor,

(b) means carried by said first panel for removably attaching said first panel on the side of said sun visor which is positioned adjacent the vehicle roof when said sun visor is in the stored position,

(c) a second rectangular panel being semitransparent and opaque to at least a part of the visual spectrum of light and of substantially the same length as said first panel, said second panel including a first edge and an opposite free edge,

(d) hinge means removably connecting said first edge of said second panel to said first panel, said hinge means comprising a pair of spaced-apart hinges, each of said hinges including a male hinge member carried by an edge portion of one of said panels, and a female hinge member carried by an edge portion of the other of said panels, said male hinge member of each of said hinges extending a short distance into the corresponding female hinge member so that one of said panels may be bowed between said spaced-apart hinges to free the ends of said male hinge members from said female hinge members and to free said second panel for removal from said first panel, and

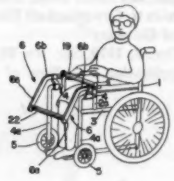
(e) latch means associated with said first and second panels for selectively maintaining said second panel in side-by-side relationship with said first panel and for releasing said second panel to swing downwardly from said first panel and into the line of vision of a person seated in said vehicle when said sun visor is lowered to the operative position.

4,280,731

RESTRAINING DEVICE FOR WHEELCHAIRS AND THE LIKE

William M. Pitts, 3266 E. Scarborough Rd., Cleveland Heights, Ohio 44118, and Don Herron, Willoughby, Ohio, assignors to William M. Pitts, Cleveland, Ohio

Filed Dec. 13, 1979, Ser. No. 103,045
Int. Cl.[3] A47C *15/00;* A62B *35/00*
U.S. Cl. 297—487 9 Claims



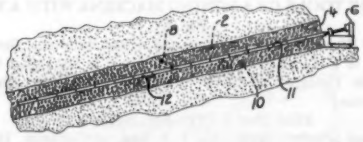
1. In combination with a wheelchair having a back support and laterally-spaced members extending forwardly from said back support and adapted to confine therebetween a patient seated in the chair against movement in a direction laterally of the chair, said members having portions providing arm supports for said patient, clamps removably secured to said members, laterally-spaced side bars supported by said clamps, each of said side bars having a rearwardly extending horizontal portion and a downwardly and forwardly extending portion, a first restraint bar supported by said rearwardly extending portions of said side bars and adapted to confine the upper portion of the patient's body against undue forward movement in said chair, and a second restraint bar substantially parallel with said first restraint bar and supported by said forwardly and downwardly extending portions of said side bars and adapted to confine the legs of said patient against undue forward movement relatively to said chair.

4,280,732

METHOD AND APPARATUS FOR MINING

John C. Haspert, Arcadia, Calif., assignor to United States Pipe and Foundry Company, Birmingham, Ala., a part interest

Filed Jan. 15, 1979, Ser. No. 3,184
Int. Cl.[3] E21B *7/28;* E21C *41/00*
U.S. Cl. 299—11 34 Claims



1. A method for continuously mining a mineral deposit without requiring miners to enter said mineral deposit comprising:

(a) drilling a pilot hole through said mineral deposit;

(b) encasing said pilot hole with a metal casing;

(c) boring out a shaft in said mineral deposit, said shaft having a substantially circular cross section, by means of a rotary mining head with a rotary hollow drive stem, said drive stem having conveyor flights in a helical pattern, said conveyor flights being attached to and protruding from the inside surface of said drive stem, and said rotary mining head being both forced into said mineral deposit and rotated by means of said drive stem;

(d) using said metal casing to guide said rotary mining head in its boring operation;

(e) removing the borings through said hollow drive stem; and

(f) jacking into said shaft means for preventing collapse thereof, said hollow drive stem being rotatably supported within said means for preventing collapse of said shaft by support means mounted on said means for preventing collapse of said shaft.

4,280,733

ASYMMETRIC MINERAL MINING PLOUGH

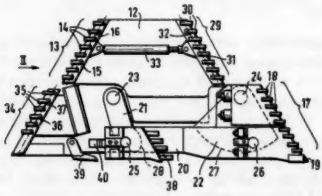
Christoph Rassmann, Lunen; Alois Hauschopp, Werne; Gunter Schwolow, Hattingan, and Horst Huss, Essen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,815

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852241

Int. Cl.³ E21C *27/34*

U.S. Cl. 299—34 **20 Claims**



1. A mineral mining plough for winning material in a material mining working wherein the plough is movable to and fro alongside a conveyor, comprising: a plough body, first cutter means provided on said body for winning material when the plough is moved in a direction opposite to that of said conveyor, said first cutter means having a first predetermined path of travel, second cutter means provided on said body for winning material when the plough is moved in the same direction as said conveyor, said second cutter means having a second predetermined path of travel, and means for vertically moving said second cutter means relative to said body, whereby when said plough is moved in said direction opposite to that of said conveyor, said moving means are operable to vertically move said second cutter means into said first path of travel.

4,280,734

ARRANGEMENT FOR CONTROLLED ENGAGEMENT OF THE TOOLS OF A MINING MACHINE WITH A MINE FACE

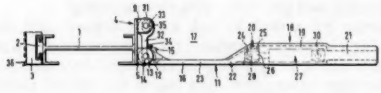
Günter Blumenthal, Westerholt, and Alfred Bollmann, Bochum, both of Fed. Rep. of Germany, assignors to Bochumer Eisenhuette Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,738

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852305

Int. Cl.³ E21C *27/32*

U.S. Cl. 299—34 **12 Claims**



1. An arrangement for controlled engagement of the tools of a mining machine, especially a coal planer, with a mine face, comprising abutment means having a front face directed towards the mine face and a rear face; guide rail means on said front face of said abutment means for guiding a mining machine for reciprocation in substantially horizontal direction along the mine face; and means for tilting said abutment means and said mining machine guided thereon about a substantially horizontal tilting axis, said tilting means being connected to and projecting rearwardly from said rear face of said abutment means and comprising elongated guide linkage means adapted to rest on the floor of the mine gallery and having a rear end section spaced from said rear face, connecting rod means guided in said guide linkage means for movement in longitudinal direction, one of said last-mentioned two means having an upwardly extending front end section pivotally attached in the region of the upper end thereof to said rear face of said abutment means, and the other of said last-mentioned two means having a front end pivotally attached to said rear face, and a tilting unit extending in the direction of said guide linkage means and being embedded and covered by said rear end section of the latter, said tilting unit being pivotally attached to the rear end of said connecting rod means.

4,280,735

NON-ROTARY MINING CUTTER WITH RECESSED NOZZLE INSERT

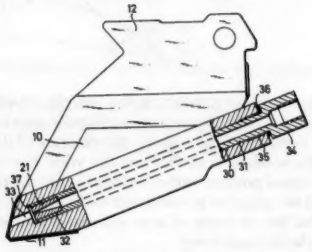
Armin Löbbe, Oberaden, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhütte Westfalia, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,339

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749830

Int. Cl.³ E21C *25/60*

U.S. Cl. 299—81 **14 Claims**



1. In or for a mineral winning machine, a non-rotary tool assembly comprising holding means and a tool detachably mounted to the holding means, the tool being provided with a cutting region and at least one nozzle for discharging a jet of high pressure fluid suitable for detaching mineral from a mineral face, said tool having a body with a detachable nozzle insert therein and wherein the body has a main bore containing the nozzle insert, and said nozzle insert has an outlet mouth communicating with a further bore coaxially with the main bore and leading to an exterior surface of the body.

4,280,736

VEHICLE WHEEL

Charles J. Raudman, 4480 Vechelli La., Redding, Calif. 96001

Filed May 24, 1979, Ser. No. 42,007

Int. Cl.³ B60B *1/08, 5/02*

U.S. Cl. 301—6 CS **4 Claims**

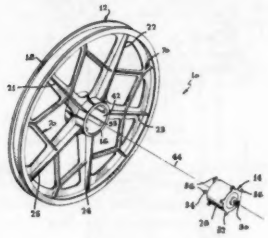
1. A vehicle wheel and hub assembly comprising:

a molded vehicle wheel having a hub with an axially-extending hole for receiving a hub assembly, said hub having a plurality of fastener-receiving tabs angularly spaced about the inside of the hole;

a hub assembly which includes a housing lying in said wheel hole, said housing having a pair of axially opposite ends with each end forming flange means for fastening to said tabs, and with said housing flange means being constructed as a unit which holds together independently of said wheel; and

fastener means for fastening said hub assembly flange means to said tabs;

said molded wheel has a rim and a plurality of spokes extending radially between said hub and rim, each of said spokes being of cruciform cross-section with an axially-extending web (**84**) extending along the center of the spoke as viewed along the axis of the wheel;



said hub includes a largely hollow cylindrical portion having an outer surface connected to said spokes and an inner surface connected to said tabs; and

each of said tabs is located halfway between the radially inner ends of the axially-extending webs of a pair of adjacent spokes, whereby to help absorb shocks transmitted radially along a spoke from the rim.

4,280,737

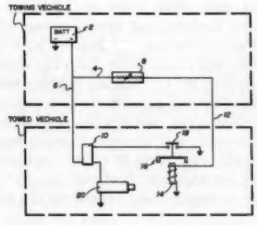
PRESSURE CONTROLLED ELECTRO-HYDRAULIC BRAKE SYSTEM

Larry W. Hipps, 506 Colorado St., Sherman, Tex. 75090

Filed Oct. 26, 1979, Ser. No. 88,349

Int. Cl.³ B60T *13/68*

U.S. Cl. 303—3 **13 Claims**



1. A control system for use in a towed vehicle equipped with hydraulic brakes comprising:

(a) a variable current source for communicating an electric signal from a towing vehicle to said towed vehicle;

(b) hydraulic pumping means communicating with the brake line of said towed vehicle;

(c) an electromagnetic variable valve means for controlling the pressure in the brake line of said towed vehicle in response to the electric signal received from said variable current source, said electromagnetic variable valve means comprising a cap portion, a valve housing portion, and an electromagnetic means which operates to draw said cap portion closer to said valve housing portion as increasing current is applied thereto, said valve housing further comprising pressure monitoring and release means whereby the hydraulic pressure in the brake line of the towed vehicle is employed as a counter force to the electromagnetic force drawing said valve cap towards said valve housing portion of said electromagnetic variable valve means.

4,280,738

TANDEM MASTER CYLINDER

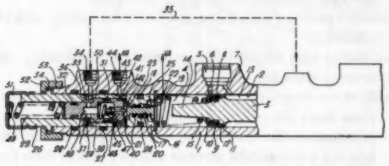
Hans-Henning Lüpertz, Darmstadt, and Peter Riedel, Hattersheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 16, 1979, Ser. No. 39,612

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830220; Jul. 10, 1978, 2830221; Jul. 10, 1978, 2830222

Int. Cl.³ B60T *8/02, 11/20*

U.S. Cl. 303—6 C **40 Claims**



1. A tandem master cylinder with a regulator for a vehicle hydraulic brake system comprising:

a first pressure piston;

a first pressure chamber bounded by one end of said first pressure piston coupled to a front-axle brake circuit;

a second pressure chamber connected to a regulator input of said regulator, said regulator being disposed adjacent the other boundary of said first pressure chamber and further including a regulator output coupled to a rear-axle brake circuit, at least one stepped piston loaded by a control spring and a regulator valve; and

means associated with said first pressure piston and said regulator valve to mechanically actuate said regulator valve by said first pressure piston to maintain said regulator valve open upon failure of said front-axle brake circuit.

4,280,739

PRESSURE MODULATING VALVES

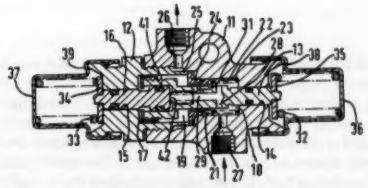
Eric C. Hales, Dorridge, England, assignor to Automotive Products Limited, Warwickshire, England

Filed Jan. 31, 1980, Ser. No. 117,351

Claims priority, application United Kingdom, Feb. 2, 1979, 03801/79

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **1 Claim**



1. A two stage pressure modulating valve for a vehicle braking system, the modulating valve comprising:

a housing;

a first bore in the housing and having an opening adjacent to one end thereof;

a second bore in the housing and having an opening adjacent to the other end thereof, the axis of said second bore being aligned with the axis of said first bore;

a stepped primary plunger having a small diameter plunger portion sealingly slidable in the first bore;

a secondary plunger sealingly slidable in the second bore and having a lost motion connection with the primary plunger which allows limited axial movement therebetween;

a cavity in the housing between the first bore and the second bore;

sealing means in said cavity slidably engaging a large diameter plunger portion of the primary plunger and dividing the cavity into a first chamber defined between said sealing means and the first bore and a second chamber defined between said sealing means and the second bore;

a primary spring biassing the primary plunger towards the secondary plunger;

a pre-loaded secondary spring biassing the secondary plunger towards the primary plunger;

an inlet port in the housing and communicating with the first chamber;

an outlet port in the housing and communicating with the second chamber;

and valve means for by-passing said sealing means to allow flow from the second chamber to the first chamber when pressure at the outlet port exceeds pressure at the inlet port by a substantial amount and to prevent flow from the first chamber to the second chamber when the force produced by pressure in the first and second chambers acting on the primary plunger overcomes the loading of the primary spring.

4,280,740

SKID PREVENTION METHOD AND AN ANTI-SKID BRAKE DEVICE

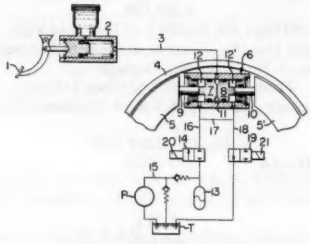
Taiji Ohmori; Yoshikazu Tsuchiya, both of Kawagoe; Makoto Sato, Kamifukuoka; Yoshitaka Miyakawa, Kawagoe, and Etsuo Fujii, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 26,991

Claims priority, application Japan, Apr. 6, 1978, 53-40688

Int. Cl.³ B60T *8/00*

U.S. Cl. 303—92 **3 Claims**



1. An anti-skid brake device comprising: brake means for imparting a brake torque to wheels in response to a driver's braking action; a wheel speed detector for detecting the rotational speed of the wheels; a main control system connected to said wheel speed detector and said brake means, for controlling said brake means such that brake torque is decreased when said wheels are being locked, and increased when the possibility of wheel lock is gone; an auxiliary control system connected to said wheel speed detector and said brake means in parallel relation with said main control system for reducing brake torque for a predetermined period, whenever wheel lock continues longer than a predetermined period due to failure of said main control system and being further defined by a time-constant-setting circuit transmitting an output signal to a discharge circuit, said discharge circuit having an output signal applied to a memory circuit means; a wheel-speed-signal setting circuit comprising a division circuit for setting a reference wheel-speed voltage signal; a comparator means for comparing the wheel speed signal with a reference-wheel voltage signal and solenoid coil means and AND gates connected for controlling operation of said solenoid-coil means.

4,280,741

PISTON ROD SUPPORT

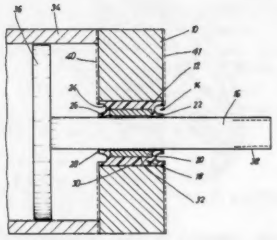
Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed Aug. 21, 1979, Ser. No. 68,319

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1978, 2838594

Int. Cl.³ F16C *27/02, 33/72*

U.S. Cl. 308—3.5 **7 Claims**



1. In a piston-cylinder mechanism including a cylinder, a pressure fluid actuated piston movable back and forth in said cylinder, a cylinder head which closes off the cylinder at one end thereof, a piston rod secured on the piston, said piston rod penetrating through a through opening in said cylinder head for carrying out a working movement, a bearing and sealing and stripping sleeve device located in the through opening between its peripheral wall and the piston rod, said sleeve device encircling said piston rod and being axially fixed in said through opening for sealing off the cylinder chamber and for wiping dirt particles off from the piston rod, said sleeve device having at its two ends, respectively, a sealing lip and a sealing and stripping lip each bearing on the piston rod, the improvement comprised in that the sleeve device has two parts, the first part being an elongate inner bearing bushing of a bearing material and the second part being an elongate outer sleeve of elastic material, said elastic outer sleeve being axially longer than the bearing bushing and having a pair of end sections which project axially beyond the bearing bushing and project radially inwardly and respectively form the sealing lip and the sealing and stripping lip, the bearing bushing being positioned axially clearance-free in a radially shallow recess of the elastic outer sleeve between the two lips thereof and being held in a snap fit therebetween, said elongate bearing bushing being of length substantially exceeding its radial thickness and substantially exceeding the axial length of said lips, the axial length of said elastic sleeve substantially exceeding the radial thickness thereof.

4,280,742

WALL CONTACTING TOOL

Daniel B. Justman, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

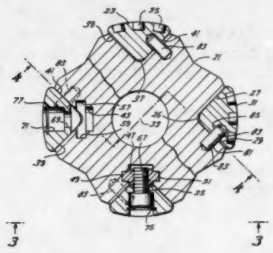
Continuation of Ser. No. 944,639, Sep. 21, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,449

Int. Cl.³ F16C *29/02*

U.S. Cl. 308—4 A **7 Claims**

1. Wall contacting tool comprising a body and a wear pad, said body and pad having correlative flute and corner means extending along the body preventing relative motion of pad and body transverse to the length of said means except outwardly from the apex of the corner, screw means extending through the pad into a screw socket carried by the body to prevent relative motion of pad and body outwardly from the apex of the corner, the axis of said screw means bisecting the apex angle of the corner and flute, said apex angle being ninety degrees, releasable retention means preventing relative motion of said screw means and pad along the bisector of said apex angle, and dowel means extending between one side of said

flute means and the adjacent side of said corner means, said dowel means preventing relative motion of said pad and body



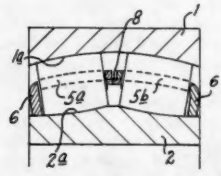
parallel to the length of said flute and corner means and further preventing relative motion of said pad and body outwardly from the apex of said flute and corner means.

4,280,743

DOUBLE-ROW SPHERICAL ROLLER BEARING

Ingemar Fernlund, Hindas, Sweden, assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Jan. 30, 1979, Ser. No. 7,671
Claims priority, application Sweden, Feb. 6, 1978, 7801322
Int. Cl.³ F16C *33/50*
U.S. Cl. 308—217 **9 Claims**



1. A double row spherical roller bearing having inner and outer rings (**1**, **2**) with confronting raceways (**1***a*, **2***a*) and a plurality of rollers (**3**) arranged into two rows in the annular space between the raceways, said rollers being symmetrical, a retainer (**5**) having a plurality of pockets for circumferentially spacing the rollers in each row adapted to be centered with respect to the inner raceway (**2***a*) by portions (**6**) which depend from the outer edges of the retainer and contact the inner raceway axially outwardly of the rows of rollers, said retainer comprising two halves (**5***a*, **5***b*) held together by a locating ring (**8**) arranged between the rows of rollers spaced radially from the inner raceway (**2***a*) adapted to contact and urge said retainer halves (**5***a*, **5***b*) in a radial direction.

4,280,744

FOLDABLE DESK

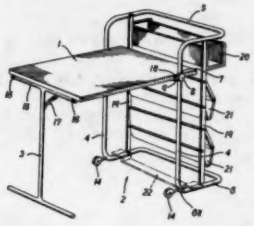
Yutaka Nakano, No. 24-17, Nakamachi 3-chome, Musashinoshi, Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,901
Claims priority, application Japan, Feb. 11, 1978, 53-151139[U]; Jul. 11, 1978, 53-153313[U]; Sep. 6, 1978, 53-122204[U]; Mar. 26, 1979, 54-38868[U]
Int. Cl.³ A47B *85/00*
U.S. Cl. 312—240 **14 Claims**

1. A foldable desk comprising:

a support frame comprising a bent pipe having a pair of riser portions erected in parallel relation on a base portion and provided with pivotal support portions in the upper portions of said riser portions;

a top plate comprising a single rectangular plate of a length greater than the height of said pivotal support portions from a floor surface and swingably supported on said pivotal support portions to have a pivotal line across the width and at a position closer to the base end thereof, said pivotal line defining a swinging length of said top plate slightly shorter than the height of said pivotal support portions; and



a leg member having the upper end thereof swingably connected to the underside of said top plate at the outer free end thereof;

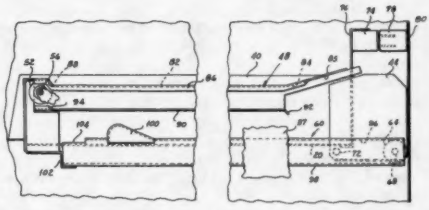
said leg member being folded onto the underside of said top plate when the outer free end of said top plate is rotated downwardly about said pivotal line into a vertical folded position.

4,280,745

MERCHANDISING MACHINE SHELF SUPPORTING STRUCTURE

Robert P. Mitchell, Pequannock, N.J., assignor to Rowe International, Inc., Whippany, N.J.

Filed Nov. 1, 1979, Ser. No. 90,502
Int. Cl.³ A47B *88/06, 96/16*
U.S. Cl. 312—323 **14 Claims**



1. In a merchandising machine having a cabinet and a shelf, apparatus for supporting said shelf for movement relative to said cabinet including in combination, a lower guide rail having a bottom wall, means mounting said lower guide rail on said cabinet with the length thereof extending generally fore-and-aft of said cabinet, an upper guide rail having a top wall, means mounting said upper guide rail on said shelf with the length thereof extending in a direction from front to back of said cabinet, a rear shelf support roller, means mounting said rear support roller on said shelf adjacent to the rear thereof at a location at which it is received by the bottom wall of the lower guide rail, a front shelf supporting roller, means mounting said front shelf supporting roller on said cabinet adjacent to the front thereof at a location at which it may receive the top wall of said upper guide, a stop pin on said shelf at a location spaced forwardly of said rear roller, a stop at the front of said lower rail adapted to be engaged by said pin and means forming a recess above said lower rail at a location spaced rearwardly of said front by a distance corresponding to the spacing between said pin and said rear roller, said upper rail top wall being formed with an offset portion at the front of said rail for receiving said front roller as said shelf moves into its home

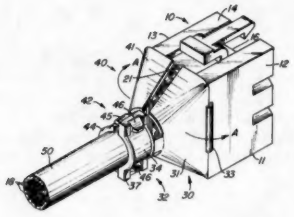
position to ensure that said shelf moves fully into its home position, said upper rail top wall being formed with an upwardly extending ramp engaged by said front roller as said pin approaches said stop, said top wall terminating adjacent to the end of said ramp to permit the front roller to extend above the top wall in the loading position of said shelf.

4,280,746

CONNECTOR ARRANGED TO PERMANENTLY LOCK ONTO A CABLE

Alexander M. Ignatowicz, Rutherford, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 25, 1979, Ser. No. 43,397
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—107 **2 Claims**



1. An electrical connector for terminating in a body of the connector a plurality of electrical conductors formed into a cable having a known diameter and for protecting the terminations by becoming permanently locked onto the terminated cable, comprising:

a pair of arms connected to and extending from opposite sides of the connector body, the arms being connected to the connector body by hinges which urge the arms to remain apart but which permit the arms to be forced together over the termination end of the connector body, each arm including a cover section for enclosing portions of the leads adjacent to the connector body and a first or a second collar section mounted at the end of the cover section;

wherein the first collar section comprises an arcuate member having a diameter no larger than the diameter of the cable, a tab attached to and extending perpendicular to the inner wall of the arcuate member for forcibly contacting and securely clasping the cable and a pair of receiving means, each of the receiving means being located at the ends of the arcuate member; and

the second collar section comprises an arcuate member having a diameter which is smaller than the diameter of the arcuate member of the first collar section, a tab attached to and extending perpendicular to the inner wall of the arcuate member for forcibly contacting and securely clasping the cable and a pair of clasps, each of the clasps being located at an end of and extending perpendicular from the arcuate member and adapted to initially contact and then lock into the receiving means as the two arms are moved into contact with each other,

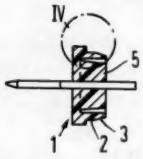
such that when the pair of arms are forced together over the termination end of the connector body to overcome the forces exerted by the hinges attempting to keep the arms apart, the pair of clasps initially contact the pair of receiving means, and as the arms are brought into further contact with the cable the second collar section is forced open, since its arcuate member has a diameter which is smaller than the diameter of the first arcuate member, thereby pushing the pair of clasps away from each other and into permanent locking relationships with the pair of receiving means, the hinges, which exert a force urging the arms to remain apart, further add to the permanent locking relationship, so that the first and second collar sections are permanently locked onto the cable thus enclosing the portions of the leads adjacent to the connector body with the cover sections.

4,280,747

CONNECTION LEAD-IN PLUG

Hans Kinzler, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,091
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1979, 2900763
Int. Cl.³ H01B *17/26*; H01R *9/16*
U.S. Cl. 339—126 RS **3 Claims**



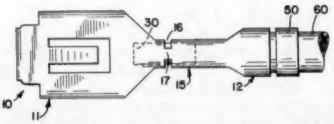
1. An electrical connector lead-in member for insertion into a bore of a housing wall for liquid tight electrical connection between the interior of the housing and electrical conductors exterior of the housing comprising: first and second portions of said member, the first portion having a circular end wall with an outside axial end surface, a projecting peripheral flange projecting axially from said end wall on a side opposite the axial end surface, the flange having an outer peripheral surface, the outer peripheral surface being radially inwardly stepped axially spaced from the end surface and having a cylindrical portion extending axially from the radially innermost portion of the step terminating in an axially extending radially inwardly tapered peripheral surface portion, the tapered portion terminating in an axial end annular surface on an end of the first portion opposite the outside axial end surface, the flange having an inner diameter, said second portion being interior of the inner diameter of the flange of the first portion and extending axially from the end wall towards the annular end surface and having a tapered outer diameter periphery tapering radially inwardly axially from the circular end wall, the first and second portions being attached together at the circular end wall, a central axially extending opening through the second portion and the circular end wall, and an electrical connector being received in the axially extending opening with a periphery of the electrical connector being in sealing contact with walls of the opening, the first and second portions being formed of an elastic material.

4,280,748

FUSIBLE TERMINAL

John R. McHenney, Fort Wayne, and Marlin A. Knowles, Poneto, both of Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 20, 1979, Ser. No. 96,110
Int. Cl.³ H01R *13/08*
U.S. Cl. 339—147 R **4 Claims**



1. A fusible terminal means having a body portion provided with cable insulation crimping means for connecting the body portion to a cable insulation, a head portion provided with

terminal connecting means for connecting the head portion to a mating terminal connecting means, a throat portion connecting the head and body portion together and having cable wire crimping means for connecting the throat portion to a bare cable wire, the throat portion further having a fuse bridge means of reduced cross-sectional area, and a rigid insulator bridge support means connected to the throat portion across the fuse bridge means for rigidifying the fuse bridge means and for preventing the separation of the head portion from the body portion in the event of fusing of the fuse bridge means, the rigid insulator bridge support means comprising a cylindrical insulator connected across the reduced cross-sectional area by axial spaced apart insulator grip means on the throat portion.

4,280,749

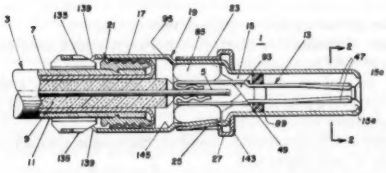
SOCKET AND PIN CONTACTS FOR COAXIAL CABLE

Valentine J. Hemmer, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 25, 1979, Ser. No. 88,429

Int. Cl.³ H01R *17/06*

U.S. Cl. 339—177 R **12 Claims**



1. An electrical contact for a coaxial cable having a center conductor surrounded by a sleeve of shielding material with insulation between the conductor and the shield and around the shield, said contact comprising:

an outer contact including an electrically conductive tubular shell, said shell including first and second ends;

a center contact having means for gripping and making electrical contact with the center conductor of the coaxial cable;

an insulator supporting said center contact within said outer contact with said center contact accessible from the first one of said tubular shell; and

a bushing comprising a tubular body and radially compressible locking means for engaging and disengaging said tubular body within the second end of said tubular shell, said tubular body comprising a first sleeve which constitutes the first end of the tubular body, a second sleeve and a flexible web joining the two sleeves in axial alignment, said locking means being affixed to said second sleeve, said tubular body being first slipped over the end of the coaxial cable with the shielding sleeve of the cable splayed back over the first end of the tubular body and the tubular body then being inserted, said first end first, and locked by the locking means into the second end of the tubular shell with the splayed back shielding sleeve in electrical contact with the interior wall of said tubular shell, said locking means on the second sleeve not engaging the shield of the cable.

4,280,750

BINOCULAR'S FOCUS OR ZOOM ADJUSTING KNOB

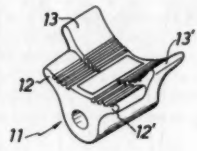
Mutsuo Uchiyama, Nihonbashi, Japan, assignor to Hilka International Co., Ltd., Nihonbashi, Japan

Filed Feb. 7, 1979, Ser. No. 10,254

Claims priority, application Japan, Sep. 11, 1978, 53-123607[U]

Int. Cl.³ G02B *7/06*

U.S. Cl. 350—76 **4 Claims**



1. In a binocular having a pair of telescopes fixed with arms disposed transversely in relation to a center shaft, a focus or zoom adjusting knob comprising a pair of generally flattened platforms integrally formed with a pair of adjusting members having upwardly projected ends adjacent said flattened platforms so as to be easily contacted by a user's fingertips, said focus or zoom adjusting knob being mounted on said center shaft.

4,280,751

TWO-WAY COUPLER FOR BRANCHED LIGHT-TRANSMISSION NETWORK

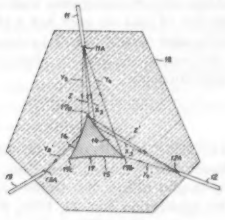
Pietro DiVita, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Apr. 24, 1979, Ser. No. 33,009

Claims priority, application Italy, Apr. 26, 1978, 67932 A/78

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.15 **10 Claims**



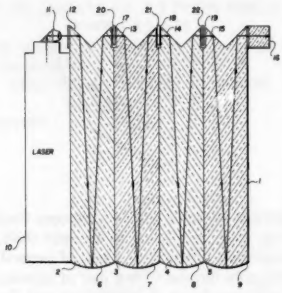
1. In a branched light-transmission network including four light guides with end faces confronting a common region, each of said light guides having an axis intersecting the axes of the other light guides, the combination therewith of a central body in said region spaced from said end faces and provided with six outer reflecting surfaces each terminating near the axes of an associated pair of said light guides, each of said surfaces being part of a respective optical focusing system with two conjugate points respectively coinciding with the centers of the end faces of the associated pair of light guides whereby light rays originating at one of said centers are reflected toward the other of said centers, each of said light guides having ray paths extending from the center of its end face to three of said reflecting surfaces whereby light rays from any one of said light guides can be directed to every other of said light guides without passing through said body.

4,280,752

SOLID-MEDIUM COHERENT OPTICAL PROCESSOR

James S. Shreve, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 9, 1979, Ser. No. 19,031
Int. Cl.[3] G02B 5/18
U.S. Cl. 350—162 SF 2 Claims



1. A unitary coherent optical processor device made of a monolithic transparent medium comprising a solid mass of transparent material having one of its surfaces formed as a plurality of contiguous curved sub-surfaces, each curved sub-surface having a reflective coating disposed thereon whereby such sub-surfaces comprise concave mirror means for reflecting light beams travelling inside of said solid mass,

said mass having the opposed surface thereof formed as a plurality of contiguous V-shaped sub-surfaces, each of said curved and V-shaped sub-surfaces comprising reflecting means for constraining light beams to travel alternately between said respective V-shaped and curved sub-surfaces substantially entirely within the interior of said monolithic solid mass,

said mass of material having a laser integral therewith, said laser being arranged to direct a light beam at its output end into an end-most one of said V-shaped sub-surfaces,

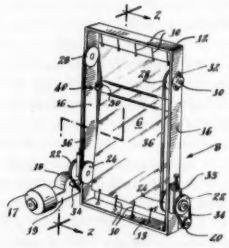
wherein there is an air gap between at least one contiguous pair of said plurality of contiguous V-shaped sub-surfaces, and at least one of said air gaps has a plate or mask disposed therein, said plate or mask having the property of changing the amplitude and/or phase of a light beam traveling therethrough.

4,280,753

FLEXIBLE MIRROR ASSEMBLY

Frank W. Neubauer, 867 6th Ave., New York, N.Y. 10001

Continuation-in-part of Ser. No. 48,056, Jun. 13, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 113,951
Int. Cl.[3] G02B 5/10
U.S. Cl. 350—295 14 Claims



1. A mirror assembly, comprising:

a sheet of flexible material having surface areas adapted to reflect light;

a rigid frame adapted to support said sheet of flexible material;

means shiftably mounted for flexing said sheet along a path extending between one pair of opposite edges of said sheet; and

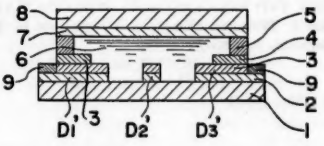
means operably coupled with said flexing means for driving said last named means to traverse said sheet whereby to cause said sheet to undulate.

4,280,754

ELECTROCHROMIC DISPLAY DEVICE AND METHOD OF MANUFACTURE

Kozo Yano, Tenri; Yasuhiko Inami, Nishinomiya; Hiroshi Hamada, Tenri, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 727,448, Sep. 28, 1976, Pat. No. 4,123,841. This application Jul. 12, 1978, Ser. No. 924,060
Claims priority, application Japan, Aug. 2>, 1975, 50-118104
Int. Cl.[3] G02F 1/17
U.S. Cl. 350—357 10 Claims



1. An electro-optical display device comprising:

a pair of conductive electrodes between which an electric field is to be established;

said pair of conductive electrodes being formed, respectively, on a first and a second substrate, at least one of said substrates being transparent;

a layer of electrochromic material disposed in contact with one of said electrodes;

said one electrode and said electrochromic material layer being segmented to form segmented areas, said segmented areas including a required segmented display pattern, the segmented display pattern areas being in contact with said electrolyte;

the edge portions of said one electrode and said electrochromic material layer which are in contact with said electrolyte being in accurate alignment; and

an insulating material layer being disposed on and in registry with those portions of said segmented areas exclusive of said segmented display pattern to define the outermost boundaries of said segmented display pattern.

4,280,755

GRAPHIC SYMBOL SELECTION AND RECORDING APPARATUS

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Feb. 21, 1979, Ser. No. 13,799
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.[3] G02F 1/33
U.S. Cl. 350—358 4 Claims

1. In a graphic symbol selection and recording apparatus:

(a) a laser source of light;

(b) font plate means for providing an array of graphic symbols and means for exposing graphic symbols of said array, selectively, to light from said laser source for providing any one of a plurality of individual graphic symbol shaped sources of light;

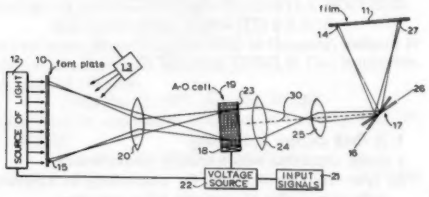
(c) a graphic symbol display medium;

(d) said array of graphic symbols and said display medium

positioned, respectively, at first and second ends of graphic symbol shaped light beam optical paths of said apparatus;

(e) optical means positioned along an optical axis of said apparatus intermediate said array of graphic symbols and said display medium for projecting an image of a graphic symbol selectively exposed to light from said laser source toward a predetermined graphic symbol display position at said display medium, said display position representative of a reference position at said display medium;

(f) acousto-optic light deflector means including an interaction medium and acoustic wave generator means for establishing any of a number of different acoustic wave light deflecting conditions within said medium thereof, said interaction medium positioned intermediate said array of graphic symbols and said optical means positioned along said optical axis;



(g) means for exposing a predetermined one of said graphic symbols of said array to light from said laser source and establishing, simultaneously, a predetermined one of said light deflecting conditions within said interaction medium for allowing said display medium to be exposed to a light image of said predetermined one of said graphic symbols through said optical means and coincident with said reference position at said display medium;

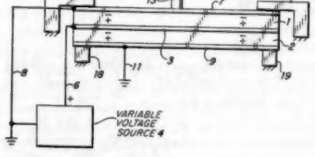
(h) means for exposing another predetermined one of said graphic symbols of said array to light from said laser source and establishing, simultaneously, another predetermined one of said light deflecting conditions within said interaction medium for allowing said display medium to be exposed to a light image of said other predetermined one of said graphic symbols through said optical means and coincident with said reference position at said display medium.

4,280,756

PIEZOELECTRIC BI-MORPH MIRROR ACTUATOR

Nedo P. Albertinetti, Canton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 2, 1979, Ser. No. 217
Int. Cl.[3] G02F 1/29
U.S. Cl. 350—360 **9 Claims**



1. A piezoelectric wavefront modulator actuator comprising:

a. a first layer of a piezoelectric medium (1) internally polarized in a given direction and having a first and second surface;

b. a second layer of a piezoelectric medium (2) mechanically coupled to said first layer and having a first and second surface, also internally polarized in said given direction;

c. a plurality of electrodes (3, 7, 9);

d. a mirror (16);

e. a driver (13) coupled between a centralized portion of said first layer and said mirror;

f. a variable voltage control source (4);

g. a support (18, 19);

h. means (21, 22) for clamping opposite non-centralized portions of said first and second layers to said support; and

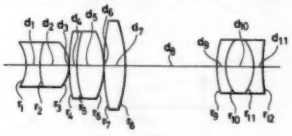
i. means (6, 8, 11) for electrically coupling said variable voltage control source to said a plurality of electodes for increasing the internal electric field in one layer while decreasing the internal electric field in the other layer for changing the degree of bending of said actuator, thereby to control the degree of displacement of said mirror.

4,280,757

OBJECTIVE LENS SYSTEM FOR MICROSCOPES

Tsutomu Tojo, Nagano, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,347
Claims priority, application Japan, Dec. 13, 1978, 53-153036
Int. Cl.[3] G02B 9/34, 21/02
U.S. Cl. 350—414 **8 Claims**



1. An objective lens system for microscopes comprising a front lens group consisting of a first positive cemented doublet component, a second lens component having positive refractive power and a third lens component having positive refractive power, and a rear lens group consisting only of a negative three-element cemented lens component, and said lens system satisfying the following conditions:

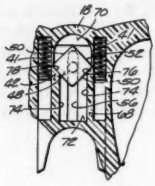
(1) $0.55<r_3/r_1<1.04$
(2) $80<\{(\nu_2-\nu_1)+(\nu_p-\nu_n)\}<130$
(3) $-0.05<f_1/f_2<0$
(4) $0.1<|(N-1)f/R|<0.4$

wherein the reference symbols r_1 and r_3 represent radii of curvature on the object side surface and image side surface respectively of the first lens component, the reference symbol R designates radius of curvature on the image side surface of the positive single-element lens component arranged in said front lens group, the reference symbol N denotes refractive index of the positive single-element lens component arranged in said front lens group, the reference symbols ν_1 and ν_2 represent Abbe's numbers of both the elements respectively of said first lens component, the reference symbols ν_p and ν_n designate Abbe's numbers of the positive and negative elements respectively of the cemented doublet component arranged in addition to said first lens component in said front lens group, the reference symbols f_1 and f_2 denote focal lengths of said front lens group and said rear lens group respectively, and the reference symbol f represents focal length of the objective lens system as a whole.

4,280,758
VERTICALLY ADJUSTABLE BIFOCAL EYE GLASSES

Tom R. Flader, Rte. 2, 4116 Meiklejohn Rd., Fond du Lac, Wis. 54935, and Don A. Ellis, New Berlin, Wis., assignors to Tom R. Flader, Fond du Lac, Wis.

Continuation-in-part of Ser. No. 956,914, Nov. 2, 1978, abandoned. This application Aug. 30, 1979, Ser. No. 71,060
Int. Cl.[3] G02C 7/06, 1/00, 5/12, 5/04
U.S. Cl. 351—55 13 Claims

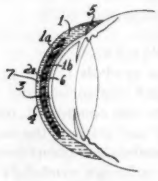


1. An eyeglasses frame including
a pair of rims, each adapted to carry a bifocal lens;
a bridge interconnecting said rims;
a nose piece adapted to rest on a wearer's nose;
a push-push mechanism carried by said bridge and operably connected to said nose piece, said mechanism being operable to afford reciprocative vertical movement of said frame relative to said nose piece between a normal position and a raised position and to releasably hold said frame in the position to which it is moved in response solely to the application of a momentary downward force on said frame with said nose piece resting on the wearer's nose.

4,280,759
PERMEABLE WETTABLE CONTACT LENS

Charles W. Neefe, P.O. Box 429, Big Spring, Tex. 79720

Filed Apr. 14, 1980, Ser. No. 139,849
Int. Cl.[3] G02C 7/04
U.S. Cl. 351—160 R 2 Claims

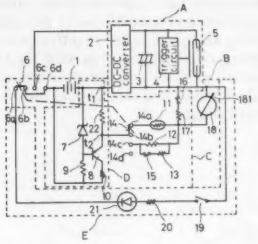


1. An oxygen permeable contact lens, having a wettable surface concave-convex in form of an optically clear permeable copolymer, made by the steps of adding 100 parts by volume monomeric methylmethacrylate to 2 to 150 parts by volume of a syrup composed of polymerized reactive organosilane, allowing the mixture to further polymerize to form a clear solid from which a contact lens having increased oxygen permeability and improved surface wetting is made by methods well known to the art.

4,280,760
FLASH CAMERA

Hiroshi Iwata, Nara; Tetsuo Yamaoka, and Hajime Mitsui, both of Osaka, all of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Sep. 26, 1979, Ser. No. 79,174
Claims priority, application Japan, Sep. 29, 1978, 53-120821
Int. Cl.[3] G03B 7/24, 7/26, 15/05
U.S. Cl. 354—21 10 Claims

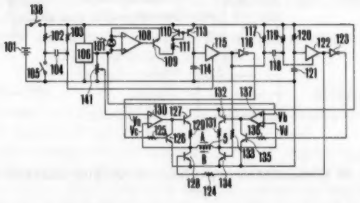


1. A flash camera comprising
a strobe apparatus with a battery power source,
an aperture control means for controlling an aperture by deflection angles of a pointer of an indicator,
a first change-over switch for controlling a power supply from said power source to said aperture control means,
a voltage generating circuit for generating a driving voltage of said aperture control means,
first series elements connected across said indicator and comprising a first resistor and a first switch for controlling turn-on and off operation of said first resistor in accordance with a degree of sensitivity of a film,
parallel elements comprising a second resistor, a photoconductive device for detecting an object intensity, and second series elements comprising a third resistor and a second switch being controlled in accordance with a setting of an object distance, and
a second change-over switch interlocked with said first change-over switch, said second change-over switch being for connecting said indicator to said photoconductive device and said parallel elements, and being for supplying a voltage of said voltage generating circuit to said indicator.

4,280,761
ELECTROMAGNETIC SHUTTER DRIVING CIRCUIT

Yukio Ogawa, Kawasaki; Ryoichi Suzuki, Yokohama; Takao Kinoshita, Tokyo, and Takashi Uchiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,116
Claims priority, application Japan, Jun. 16, 1978, 53-73040
Int. Cl.[3] G03B 7/097; H01H 47/00
U.S. Cl. 354—29 5 Claims



2. A circuit for electromagnetically driving the shutter blades of a shutter for an exposure, comprising:
an electromagnetic driving device including a coil;

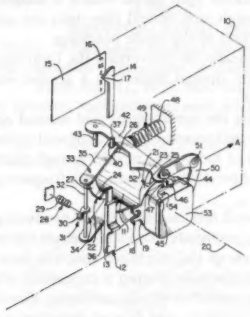
a control circuit for supplying a current to the coil;
light measuring means for measuring the brightness of an object and for producing a signal corresponding to the measured light value;
inverting means for inverting the polarity of the current to be supplied to the coil in accordance with the output of the light measuring means;
constant means for maintaining a constant electric value;
detecting means for detecting an electric value at the coil; and
comparison means for comparing the output of the constant means with that of the detecting means;
said comparison means being coupled to the control circuit for controlling the electric value to be supplied to the coil and keeping the electric value constant.

4,280,762

CAMERA HAVING AN INDEPENDENTLY FOCUSED RETRACTABLE OBJECTIVE LENS

Claus Prochnow, Brunswick, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke GmbH & Co., Brunswick, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,358
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856196
Int. Cl.³ G03B *3/00, 17/04*
U.S. Cl. 354—187 **3 Claims**



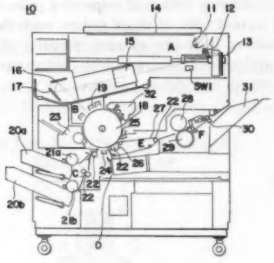
1. A camera including a camera housing and an objective lens having an image axis:
means for manually setting the focal range of said camera;
means for mounting said objective lens for movement substantially parallel to said image axis, between an extended exposure position and retracted storage position;
means for variably limiting axial movement of said mounting means in said extended position;
means, responsive to said range setting means, for varying said limiting means; and
means for releasably locking said mounting means in said storage position, said locking means comprising at least one locking lever pivotally mounted at one end with an arresting pawl on the other end and a plunger pin mounted on said mounting means such that in said storage position said pawl releasably engages said plunger pin preventing extention of said mounting means, said locking means further including means for releasing said plunger pin from engagement with said pawl, said releasing means comprising a release element internal to said camera housing, and connected to said locking means; and a manually actuated knob, external to said housing, for operating said release lever removing said locking means pawl from engagement with said plunger pin,
said camera further comprising an objective lens cover, pivotally mounted on said mounting means for movement between an open position and a closed position, said cover including an arresting projection, wherein said locking means comprises two locking levers disposed in diametrically opposing positions with respect to said mounting means, said one end of each of said levers pivotally mounted on a common pivoting axle and said arresting pawl of one of said locking levers releasably engages said plunger pin and said arresting pawl of the other of said locking levers releasably engages said arresting projection only when said cover is in said closed position and said mounting means is in said storage position.

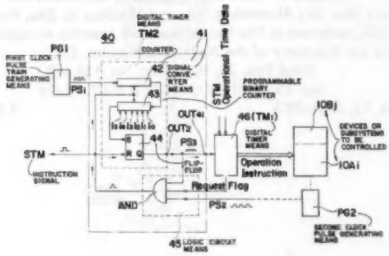
4,280,763

SEQUENTIAL CONTROL CIRCUIT MEANS

Kenichi Arai, Nakano; Kenji Shibazaki, Aichi; Tsuneo Kitagawa, Toyohashi; Tomoji Murata, Toyokawa, and Kenzo Nagata, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 20, 1979, Ser. No. 32,104
Claims priority, application Japan, Apr. 24, 1978, 53-49540
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **4 Claims**





1. A mechanical apparatus including a plurality of devices, and a sequential control means which is adapted to control with a timer means the actuating timing with respect to at least one of an operational mode and a stop mode of at least one of said plurality of devices, said sequential control means comprising:
(a) a first pulse generator for generating a first train of clock pulses;
(b) first counting means operatively connected to said first pulse generator for counting the number of pulses of said first train of clock pulses, said first counting means being adapted to be timed up upon the completion of the counting of a predetermined number of said pulses of said first train of clock pulses, the time period t_0 necessary to count said predetermined number of pulses of said first train of clock pulses, being predetermined;
(c) a second pulse generator for generating a second train of clock pulses in response to an operation of means for driving said mechanical apparatus, with respective pulse time intervals of said second train of clock pulses being

correspondingly variable in accordance with a variation of the driving rate of said driving means, the minimum value t of a pulse interval of said second train of clock pulses being longer than said time period t0;

(d) second counting means operatively connected to said first counting means and adapted to count each time said first counting means performs said counting of said predetermined number of pulses of said first train of clock pulses, said second counting means used as a counter of said timer means and outputting a control signal upon completion of the counting of a specific number, said specific number being predetermined in accordance with said actuating timing with respect to at least one of said operational mode and said stop mode of said at least one device to be controlled; and

(e) actuating means to enable said first counting means to start counting in accordance with the detection of the first pulse generated by said second pulse generator, after said first counting means has been timed-up;

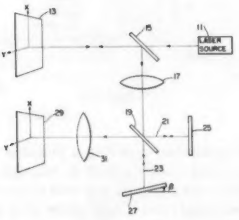
whereby the timing of the generation of said control signal of said second counting means is correspondingly varied in accordance with said respective pulse time intervals of said second train of clock pulses, such that the operation of said at least one of said plurality of said devices is controlled in accordance with said variation of said driving rate of said driving means.

4,280,764

PHASE-CONJUGATE INTERFEROMETER

Louis Sica, Jr., Alexandria, Va., and Hwaling H. Szu, Potomac, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 21, 1980, Ser. No. 123,339
Int. Cl.³ G01L *1/24;* G01B *9/02, 11/16*
U.S. Cl. 356—35.5 **8 Claims**



1. An interferometer device comprising:

a beam splitter for dividing an input beam of coherent monochromatic light into an object beam and a reference beam after the input beam has been reflected from a surface under investigation;

a phase-conjugate mirror spaced from the beam splitter for reflecting the reference beam back to the beam splitter with a reversal in phase;

a mirror spaced from the beam splitter and tiltable at an angle with respect to a plane normal to the object beam for reflecting the object beam back to the beam splitter to recombine with the reflected reference beam; and

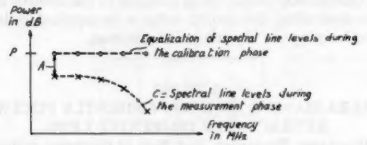
means for imaging the interference pattern produced by the recombined beams.

4,280,765

OPTICAL FIBER TRANSFER FUNCTION MEASURING SYSTEM

Lucien J. P. Pophillat, Croix Rolland Rospez; Jean J. Moalic, 40, Avenue d'Alsace, both of Lannion, France 22300, and Yvon J. Sorel, Kernu Louannec, Perros Guirec, France 22700

Filed Feb. 27, 1980, Ser. No. 125,088
Claims priority, application France, Mar. 2, 1979, 79 05543
Int. Cl.³ G01N *21/84*
U.S. Cl. 356—73.1 **18 Claims**


Power in dB
P
A
Equalization of spectral line levels during the calibration phase
C: Spectral line levels during the measurement phase
Frequency in MHz

1. A transfer function measuring system for measuring the transfer function of an optical fiber, said system comprising:

means for producing a first electrical composite signal having a discrete disribution of predetermined component frequencies;

laser emission means for converting said first electrical signal into a modulated light signal which is adapted to be transmitted through said optical fiber into the uniformly excitation condition of the mode coupling;

optical detection means for converting the light signal outputting from said optical fiber into a second electrical composite signal;

means for analyzing the spectrum of said second electrical signal to display said transfer function of said optical fiber by measurement of the power of said second electrical as a function of said predetermined discrete frequency distribution; and

means included in said first electrical signal producing means for adjusting the amplitude of said first electrical signal to equalize the levels of the displayed spectral lines at said predetermined frequencies during a calibration phase for which said laser emission means transmits directly said modulated light signal to said optical detection means.

4,280,766

OPTICAL GYROSCOPE SYSTEM

Willis C. Goss, Altadena, and Raymond Goldstein, Monrovia, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

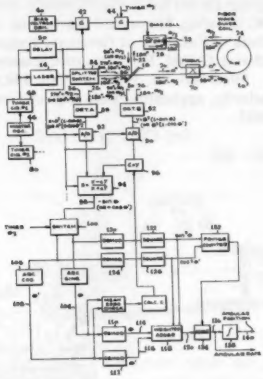
Continuation-in-part of Ser. No. 853,349, Nov. 21, 1977. This application Dec. 22, 1978, Ser. No. 972,252
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **7 Claims**

1. In an interferometer gyroscope which includes means defining a wave path that includes a portion extending in a loop, means for directing electromagnetic waves in opposite directions along said wave path, and means responsive to the phase difference of the waves passing in opposite directions along said wave path for indicating rotation of the loop, the improvement comprising:

phase shift means disposed along said wave path and controllable to shift the relative phase of the waves travelling in opposite directions by an odd multiple of 90° at zero rotation of the loop; and

mode control means for controlling said phase shift means so that it alternately operates in a first mode wherein it shifts the relative phase of waves directed to travel in opposite

directions at substantially the same time through said loop, and then in a second mode wherein it does not shift the



relative phase of waves travelling in opposite directions at substantially the same time through said loop.

4,280,767

PRINTING APPARATUS

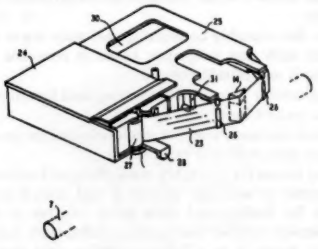
John S. Heath, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,456

Claims priority, application United Kingdom, Feb. 9, 1978, 35407/78

Int. Cl.[3] **B41J** *35/14, 35/18*

U.S. Cl. 400—216.2 **5 Claims**



1. Printing apparatus comprising a platen for supporting and feeding a print receiving document,

an impact printing head mounted on a carrier for longitudinal movement along said platen to define a print row,

a print ribbon feed assembly supported on said carrier adapted to support and feed a longitudinally striped multicolour ribbon between said printing head and said platen,

the ribbon feed assembly being pivotally mounted on said carrier so as to be movable from a first tilt position into a plurality of predetermined other higher tilt positions all of which interposes a different colour stripe of said ribbon between the print element of the print head and the platen,

a detent mechanism movable with said carrier and operable for supporting the ribbon feed assembly in any selected tilt position,

a cam follower carried by said feed assembly,

a fixed cam surface located at a first position along said print row beyond the point where printing is required so as to be engaged by said cam follower during movement of the print head along the print row beyond the point where printing is required,

said cam surface and said cam follower coacting at said first position during movement of said carrier to lift said assembly through said plurality of tilt positions,

a detent trip mechanism located at a second position along said print row beyond the point where printing is required in advance of said cam surface to contact and unlatch said detent mechanism during movement of said head to said second position for releasing said ribbon feed assembly for lowering from any of said higher tilt positions to said first tilt position,

and control means for controlling movement of said carrier along said print row to enable printing operations to be performed in any selected colour along said print row where printing is required,

said control means being operable for moving said carrier selectively to said first or second positions to select a tilt position of said ribbon feed assembly to enable subsequent printing to be performed in any selected colour.

4,280,768

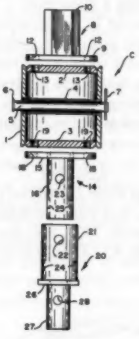
ANCHOR DRIVE COUPLER

James I. Pardue, Jr., Birmingham; William M. Hornsby, Hueytown, and Henry J. Noble, III, Birmingham, all of Ala., assignors to Dixie Electrical Manufacturing Company, Memphis, Tenn.

Filed Dec. 20, 1979, Ser. No. 105,593

Int. Cl.[3] **F16D** *1/00*

U.S. Cl. 403—3 **5 Claims**

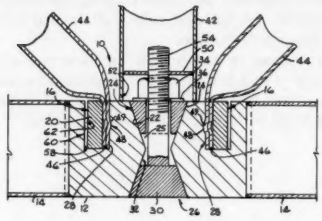


1. In an anchor drive coupler for use in connecting a drive means with an earth anchor in preparation for and use in embedding the anchor into the ground, comprising, a length of sleeve means, said sleeve means having upper and lower closure plates, fastener means provided upon the upper closure plate for attachment with the drive means, an upper adapter, said adapter incorporating a length of shaft having a plate integral of its lower end, and said adapter and its plate means secured by said fasteners to the upper closure plate of the coupler, means connectible with the lower closure means for fastening the coupler with the earth anchor, said means connectible with the lower closure plate including a lower adapter, said adapter incorporating a length of tubing having a plate integrally secured with its upper end, said adapter and its plate being secured by fasteners to the lower closure plate of the coupler, an anchor drive section, said section designed for fitting onto the lower adapter tubing, said section also designed for connecting with the earth anchor, there being aligned apertures provided through said anchor drive section and the tubing of the lower adapter, and a pin insertable through said apertures for interlocking said components together.

4,280,769
JOINT AND FRAMEWORK

Jerzy W. Ceglowski, Durban North, South Africa, assignor to Universal Framework Coupling (Proprietary) Limited, South Africa

Filed May 23, 1979, Ser. No. 41,740
Claims priority, application South Africa, May 24, 1978, 78/2992
Int. Cl.[3] F16B 7/04
U.S. Cl. 403—218 16 Claims



1. A coupling for coupling together a plurality of members, the coupling including

a plurality of coupling elements, each coupling element being securable to a different one of the members and each coupling element having at least one groove therein, with a wall of the groove defining an engagement shoulder, the coupling elements further being configured and arranged adjacent one another in an annular manner to define a central space having a polar axis;

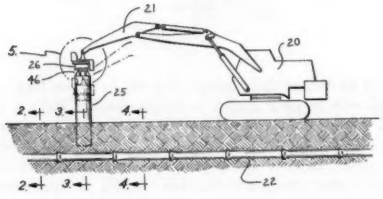
a locking ring received in the grooves with its polar axis parallel to the polar axis of the central space and engaged with the engagement shoulder of each element; and

a biassing means located in the central space engaging the elements and biassing the shoulders of the elements into locking engagement with the locking ring.

4,280,770
APPARATUS FOR COMPACTING SOIL

Roy J. Woodruff, P.O. Box 10127, Bradenton, Fla. 33507

Filed May 25, 1979, Ser. No. 42,438
Int. Cl.[3] E01C 19/38
U.S. Cl. 404—133 7 Claims

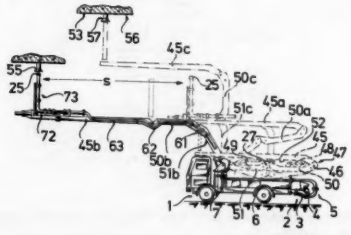


1. A compactor comprising an elongated rigid tubular member open at its lower end, a power driven vibrator having a rigid housing with laterally spaced vertical flanges, a bottom plate, and eccentric weight means rotatable in said housing and positioned between said flanges, a transverse rigid beam having spaced channel members each receiving one of said vertical flanges, rubber damping members each anchored in a channel and to the received flange, a rigid member projecting upwardly from said tubular member and releasably secured to the bottom plate of said vibrator housing, and means carried by said beam substantially equally spaced from and between said flanges for releasably connecting said beam to a supporting vehicle.

4,280,771
APPARATUS FOR DISTRIBUTING CONCRETE, ESPECIALLY IN THE SHUTTERING OF GALLERY LININGS IN MINE AND TUNNEL WORKINGS

Friedrich W. Schwing, Herne, and Karl-Ernst von Eckardstein, Kamen, both of Fed. Rep. of Germany, assignors to Friedrich Wilh. Schwing GmbH, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,176
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752605
Int. Cl.[3] E21D 11/10
U.S. Cl. 405—150 7 Claims



1. A concrete distribution device for use in the shuttering of gallery linings in mines and tunnels, said device mounted on a transportation platform and having an articulated conduit for conveying concrete, said device comprising:

a column vertically mounted onto the transportation platform, said column having a central axis;

a main boom mounted adjacent to said column, said main boom having a first mast section and a second mast section mounted adjacent to said first mast section, second first mast section furter being mounted adjacent to said column;

means for rotatably connecting said main boom to said column such that said main boom is rotatable about said central axis of said column;

first means for pivotably connecting said first mast section to said second mast section;

a swivel extension member mounted adjacent to said second mast section of said main boom;

second means for pivotably connecting said swivel extension member to said mast section of said main boom;

means for folding said main boom relative to said swivel extension member and to said column such that when said main boom is in a folded position, said first pivotably connecting means is disposed between said swivel extension member and the platform; and

means for extending said first and second mast sections of said main boom in a confined area from said folded position to an extended position such that said swivel member is extended vertically and horizontally relative to said column.

4,280,772
LEADLESS METHOD AND APPARATUS FOR DRIVING PILES

Fredric Rusche, 30303 Beck Rd., Wixom, Mich. 48096

Filed Mar. 14, 1979, Ser. No. 20,530
Int. Cl.[3] E02D 7/06
U.S. Cl. 405—232 9 Claims

1. A leadless method for driving a pile, comprising:

suspending the pile from a crane boom in vertical position with the lower end of the pile disposed on the location into which the pile is to be driven;

supporting the suspended pile against tipping and lateral movement by engaging the same at a location above the lower end thereof in a guide on the crane;

suspending over the upper end of the pile a wild hammer having a guide including a socket,

engaging the socket over the upper end of the pile; and

driving the pile downwardly by blows applied by the wild

hammer to the upper end thereof while the pile is supported by the guide on the crane and while the upper end thereof is engaged in said socket, characterized by the absence of leads for supporting the pile or a pile-supporting member or the wild hammer guide.

4,280,773

SHAVING CUTTER AND METHOD OF PRODUCING THE SAME

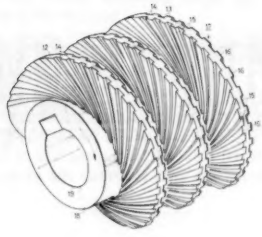
Masato Ainoura, 1253 Eguchi, Kita-Shigeyasu-cho, Miyaki-gun, Saga-ken, Japan

Filed May 15, 1979, Ser. No. 39,237

Claims priority, application Japan, May 31, 1978, 53-65360; Mar. 20, 1979, 54-32469

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—27 **3 Claims**



1. A shaving cutter for finishing gear teeth including a shaft, a helical thread integrally formed at a constant pitch on an outer periphery of the shaft, said thread extending radially outwardly from the shaft, and a plurality of cutting portions provided on at least one of two flanks of said thread to cut said gear teeth, comprising: a plurality of cutting grooves formed on said thread with a predetermined depth from the outer surface of the flank of the thread, said cutting grooves extending from an inner end adjacent to the shaft to an outer end radially outwardly away from the shaft, said cutting grooves being respectively inclined against lines extending radially outwardly from the shaft at angles between 15° and 90° toward rotational direction of the shaft; a plurality of lands, each land defined between two adjacent cutting grooves; and cutting edges formed at front margins of said lands, said cutting edges having logarithic curve configurations to allow for continuous abutting against the gear teeth to be cut at a predetermined constant angle so that when the shaft is rotated for cutting, fluctuation due to change of cutting resistance is eliminated.

4,280,774

BALL END MILL

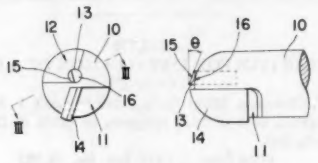
Takatsura Hayama, Suita, Japan, assignor to Kabushikigaisha Nippon Kogu Seisakusho, Osaka, Japan

Filed Oct. 1, 1979, Ser. No. 81,084

Claims priority, application Japan, Nov. 13, 1978, 53-140213

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—36 **9 Claims**



1. A ball end mill comprising:

a mill body having a longitudinal axis and an end surface, said mill body being rotatable about said axis;

center cutting means mounted on said mill body for cutting a central part of a cutting area of said ball end mill upon rotation of said mill body about said axis, said center cutting means comprising at least one elongated bar embedded in said mill body and extending generally longitudinally thereof, said bar having a circular or oval cross-section and having a free end extending outwardly from said end surface of said mill body, said free end of said bar having a planar surface formed along a plane extending at an angle other than a right angle to the longitudinal axis of said bar, thereby forming a curved cutting edge, said bar being positioned such that a part of the periphery of said cutting edge is positioned at said longitudinal axis of said mill body;

peripheral cutting means mounted on said mill body for cutting a peripheral part of said cutting area of said ball end mill upon rotation of said mill body about said longitudinal axis thereof, said peripheral cutting means including at least one member separate from said bar and having a peripheral cutting edge extending outwardly from the vicinity of said longitudinal axis of said mill body along said end surface of said mill body, such that said peripheral part of said cutting area cut by said peripheral cutting edge overlaps the periphery of said central part of said cutting area cut by said curved cutting edge.

4,280,775

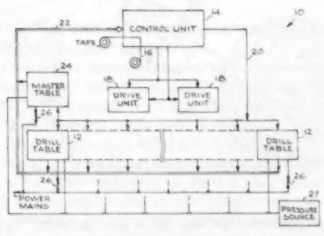
HOLE DRILLING MACHINE AND WORK POSITIONING SYSTEM

Ross C. Wood, 633 California St., El Segundo, Calif. 90245

Filed Jun. 20, 1978, Ser. No. 917,298

Int. Cl.³ B23B *39/08*

U.S. Cl. 408—3 **45 Claims**



1. A hole drilling machine comprising:

a plurality of work stations, each including a work table, a work carrier, and a tool for performing a work operation;

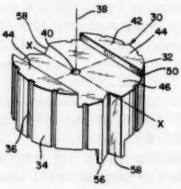
a common drive frame;
means rigidly coupling the respective work carriers to the common drive frame for moving the respective carriers in any direction along their associated work tables while permitting movement of the carriers toward and away from their associated work tables;
means for precisely controlling the movement and position of the drive frame; and
means for supporting the carriers adjacent their associated work tables without frictional contact therewith.

4,280,776

APPARATUS FOR INSTALLATION OF A DOOR LOCKSET

Peter C. Chaconas, Silver Spring, and Richard A. Schafebook, Lutherville, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 7, 1979, Ser. No. 18,383
Int. Cl.³ B23B *49/00*
U.S. Cl. 408—72 R **11 Claims**



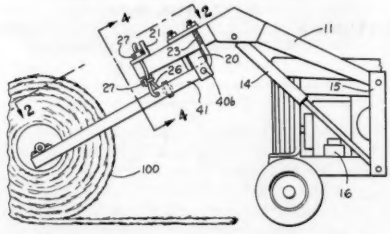
1. A guide for installing a lockset in a door having an edge comprising:
(a) a body having a flat face lying in a plane,
(b) a pair of recesses formed in the body,
(c) one of the recesses located in the flat face, having a width normally greater than the thickness of the door edge, and having a flat base and at least one side,
(d) the flat base being substantially parallel to the flat face,
(e) the other recess having a sloped base formed at a predetermined angle with respect to the flat face,
(f) an aperture extending longitudinally through the body to define a pilot hole guide, and
(g) the aperture formed perpendicular to the flat face.

4,280,777

BALED HAY HANDLING APPARATUS

Thomas C. Gray, P.O. Box 67, Rte. 3, Iva, S.C. 29655

Filed Jan. 24, 1980, Ser. No. 115,089
Int. Cl.³ B66F *9/18*
U.S. Cl. 414—24.6 **2 Claims**



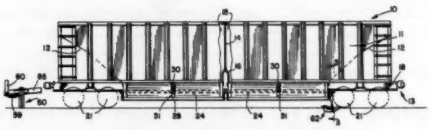
1. An apparatus for use on a conventional hydraulically operated front end loader carried on a conventional tractor, said front end loader including a pair of horizontally spaced boom arms, said apparatus comprising:
a first horizontally oriented frame element;
means for removably securing said first frame element to said spaced boom arms;
a second horizontally oriented frame element;
means for removably securing said second frame element to said spaced boom arms forward of said first frame element;
a pair of elongated bale clamping arms;
slotted joint means for pivotally connecting first ends of said bale clamping arms to said first frame element for swinging movement in a common plane between an open bale release position and a closed bale supporting position and for allowing outer ends of said bale clamping arms to be adjusted vertically relative to said spaced boom arms;
adjustable flexible support means extending between said second element and said bale clamping arms permitting said arms to be moved horizontally between said opened and closed positions and for varying the angle between said clamping arms and said boom arms;
actuator means connected between said clamping arms for effecting adjustment of said clamping arms between said open and closed positions; and
a pair of disk elements, one supported on an extended end of each of said clamping arms and detailed for rotation about a common axis, and wherein each of said disk elements include a number of projections extending axially toward each other and detailed for engaging opposite sides of a bale when said clamping arms are adjusted to said closed bale supporting position.

4,280,778

HOPPER CAR DOOR OPERATING MECHANISM

Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 9, 1979, Ser. No. 37,569
Int. Cl.³ B65G *67/00*
U.S. Cl. 414—387 **12 Claims**



1. In a railway hopper car riding on wheels and having a hopper structure including downwardly and outwardly diverging slope sheets, outer side walls defining with said slope sheets discharge openings, and doors hingedly connected to said outer walls movable downwardly and outwardly from closed to open positions, the improvement of a door locking mechanism for each door comprising,
a support on said hopper,
a plunger reciprocally connected to said support,
wheel trip actuating means movably supported on the ground adjacent to a railway track for actuation upon engagement with a car wheel and having cam means adapted to contact and move said plunger,
a latch mechanism movably supported on said hopper car and including an arm having a hook portion,
a keeper means associated with said door and engageable with said hook portion during the closed position of said door,
said plunger being movable in one direction upon engage-

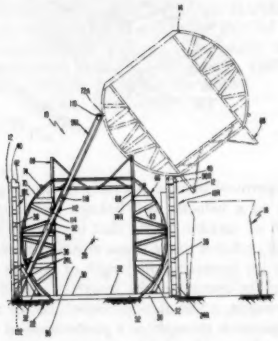
ment with said wheel trip actuating means to engage and move said hook portion out of engagement with said keeper means whereby said door is moved to an open position.

4,280,779

METHOD AND APPARATUS FOR EMPTYING THE CONTENTS OF A CONTAINER

Lee A. Warner, and Michael H. Willcutt, both of Raleigh, N.C., assignors to Cotton Incorporated, New York, N.Y.

Filed Jul. 11, 1979, Ser. No. 56,806
Int. Cl.³ B65G *65/34*
U.S. Cl. 414—420 **32 Claims**



1. A container dumping apparatus comprising:
a frame having first and second sides;
a carrier positioned on said frame for movement relative thereto, said carrier including means for supporting a container to be dumped,
a dumping means operably connected to said carrier and including actuating means selectively actuable:
in a first mode for raising and generally inverting said carrier at said first side of said frame to dump the contents of said container over said first side, and
in a second mode for raising and generally inverting said carrier at said second side of said frame to dump the contents of said container over said second side.

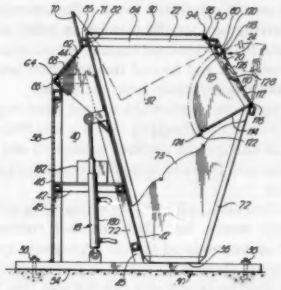
4,280,780

REFUSE CONTAINER

Jacob J. Neufeldt, c/o Neufeldt Industries Ltd., P.O. Box 597, Lethbridge, Alberta, Canada T1J 3Z4

Filed Jun. 5, 1979, Ser. No. 45,668
Claims priority, application Canada, Apr. 5, 1979, 324965
Int. Cl.³ B65G *67/04;* B65F *3/00*
U.S. Cl. 414—572 **23 Claims**

9. A self dumping refuse container assembly, comprising:
a frame;
a container mounted on said frame for pivotal movement in a vertical plane between a lower, upright position for receiving refuse material and an elevated, at least partially inverted position for discharging refuse material, said container having refuse material receiving and refuse material discharge openings;
lid means mounted on said container for opening and closing said openings;
said lid means including at least one refuse material feed chute pivotally connected to said container, each said chute being movable between a closed position and an open position, and having latch means releasably securing each said chute in said closed position; and



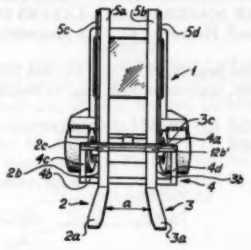
power means for pivoting said container between said lower and elevated positions.

4,280,781

FORK-LIFT TRUCK HAVING MEANS FOR REGULATING THE HORIZONTAL DISTANCE BETWEEN THE TINES AND FOR LATERALLY DISPLACING THE TINES

Ove Bodin, Box 54, 710 10 Fjugesta, Sweden

Filed Apr. 18, 1979, Ser. No. 31,330
Claims priority, application Sweden, Apr. 25, 1978, 7804716
Int. Cl.³ B66B *9/20;* B66F *9/00*
U.S. Cl. 414—671 **10 Claims**



1. A fork lift truck having tines by which goods can be lifted and conveyed, comprising:
a frame member;
a key member;
a shaft member, said shaft member being rotatably mounted in a substantially horizontal direction on said frame member, and having key way means for accommodating said key member;
a spindle member, said spindle member being mounted on said shaft member and having:
key way means for accommodating said key member such that said spindle member is axially slidable on said shaft member and rotatable with said shaft member;
a first region having a right hand thread;
a second region having a left hand thread; and
a third region substantially centrally located on said spindle member and including at least a part of said first region and at least a part of said second region;
a first tine member, said first tine member being supported by said frame member and having a first sleeve member, said first sleeve member having a right hand thread and being threadedly mounted on said first region of said spindle member;
a second tine member, said second tine member being sup-

ported by said frame member and having a second sleeve member, said second sleeve member having a left hand thread and being threadedly mounted on said second region of said spindle member;

first drive means connected to said shaft member for rotatively driving said spindle member in order to selectively rotate said first and second regions of said spindle member so that said first and second tine members are selectively driven toward and away from each other;

second drive means connected to said third region of said spindle member for laterally moving said first and second regions of said spindle member relative to said shaft member so that said first and second tine members are laterally displaced;

whereby when said shaft member is rotatively driven by said first drive means, said shaft member rotates, said key member accommodated therein urging said spindle member mounted thereon to rotate in unison with said shaft member thereby selectively driving said first and second tine members toward and away from each other; and

further whereby when said spindle member is laterally driven by said second drive means, said key way means included on said spindle member is guided in said lateral movement by said key member accommodated in said key way means included on said shaft member.

4,280,782

AIR CUSHION TABLE FOR TRANSPORTING LAYERS OF LAMINAR MATERIAL, E.G. LAYERS OF FABRIC

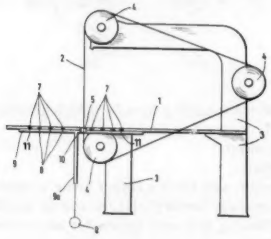
Günter O. Stumpf, Höhenweg 13, 7421 Mehrstetten, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,787

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746086

Int. Cl.³ D06H 7/24; B26D 7/20

U.S. Cl. 414—676 **5 Claims**



1. An arrangement for cutting layers of a lamina material with a cutting member which is stationary relative to the surface area of a support plate through which said cutting member extends, said support plate comprising an air cushion table provided with upwardly directed air outlet apertures which are connected with a compressed air source and are directed beneath the layers of lamina material, and wherein the layers of lamina material are displaced by hand across the surface of the air cushion table during a cutting operation, characterized by the collective compressed air conduits (8) in the area of the outlet openings (7) being provided within plate-shaped inserts (11) of less thickness than their diameters of porous sintered material which correspond to the cross sectional area of the compressed air conduits.

4,280,783

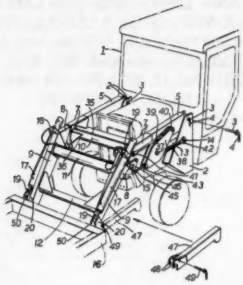
LOST MOTION LINKAGE ASSEMBLY FOR A FRONT LOADER

John A. D. Hayward, Knoll Farm, Damerham, Fordingbridge, Hampshire, SP6, England

Filed Apr. 10, 1979, Ser. No. 28,915

Int. Cl.³ E02F 3/70

U.S. Cl. 414—686 **10 Claims**



1. An improved linkage assembly comprising frame means attachable to a vehicle, said linkage including at least one loading jib of variable length that is turnable upwardly and downwardly relative to the frame means, means adapted to act on said jib for increasing the length of said jib during raising thereof and for decreasing the length of the jib as it is subsequently lowered, a lost-motion connection for rendering said means inoperative throughout a predetermined lower portion of the path of upward and downward turning movement of the jib, wherein: said jib is maintained in a minimum length position throughout said predetermined lower portion of the path of upward and downward turning movement thereof by a pair of plates that are pivotally connected to a first jib portion, said plates also being pivotally coupled to a second jib portion and to said frame means by way of said lost-motion connection so that, upon raising the jib from a lowered position, said lost-motion connection prevents pivotal movement of said pair of plates until a predetermined inclination of the jib to the horizontal has been attained and whereafter, said pair of plates is caused to pivot relative to the first jib portion, the pivotal movement thereof being employed to cause length-increasing displacement of the second jib portion relative to the first jib portion.

4,280,784

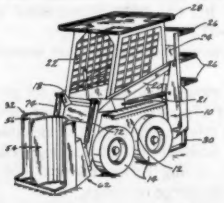
ANIMAL CARCASS HANDLING VEHICLE

William S. Ramacciotti, 13603 Q St., Omaha, Nebr. 68137

Filed Mar. 9, 1979, Ser. No. 19,091

Int. Cl.³ B66F 9/12

U.S. Cl. 414—722 **3 Claims**



1. In combination,

a skid-steer vehicle having rearward and forward ends and a pair of boom arms pivotally secured at one end to said vehicle and extending forwardly therefrom,

and an animal carcass handling bucket mounted on the forward end of said boom arms,

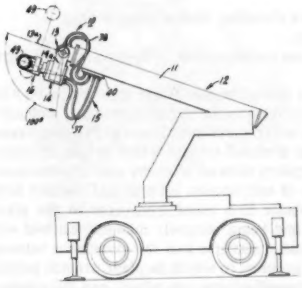
said vehicle having a protective cage extending around the operator's station, said cage having an open forward end, spaced apart side portions, a rearward end and an upper end, and a guard means mounted on the upper end of said cage and spaced outwardly therefrom for preventing the upper end of said cage from coming into contact with hanging animal carcasses.

4,280,785

MULTI-DIRECTIONAL LIFTING AND HANDLING ATTACHMENT FOR A CRANE BOOM

Robert G. Albrecht, Shingle Springs, Calif., assignor to Wismer & Becker Contracting Engineers, Sacramento, Calif.

Filed May 9, 1979, Ser. No. 37,487
Int. Cl.³ B66C *1/00, 1/18*
U.S. Cl. 414—735 **1 Claim**



1. A multi-directional lifting and handling attachment for a crane boom comprising:

a. an elongated main frame;

b. means for mounting said main frame on the crane boom;

c. an elongated sub-frame pivotally connected to said main frame for rotation of said sub-frame about an axis transverse to the longitudinal axis of said main frame;

d. a work piece supporting frame rotatably connected to said sub-frame for rotation of said work piece supporting frame about an axis located substantially in a vertical plane including the longitudinal axis of said main frame;

e. gripping means on said work piece supporting frame for removably securing an elongated work piece on said work piece supporting frame, said gripping means including an elongated cradle and at least one U-shaped flexible band selectively adjustable so as to secure elongated work pieces of different transverse dimensions positioned in said cradle;

f. first hydraulic actuator means for selectively moving said sub-frame relative to said main frame by rotating said sub-frame about said transverse axis;

g. second hydraulic actuator means for moving said work piece supporting frame relative to said sub-frame by rotating said work piece supporting frame about said axis vertically coplanar with the longitudinal axis of said main frame; and,

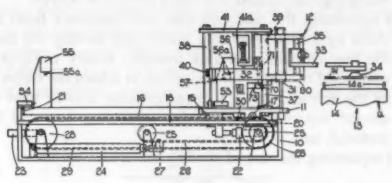
h. cooperating limit stop and stop pad means on said main frame and said sub-frame, respectively, for limiting the extent of rotational movement of said sub-frame relative to said main frame about said transverse axis to a predetermined arc.

4,280,786

FEED MECHANISM

Leslie Dyche, Birmingham, England, assignor to The Tool Production and Design Company Limited, Tamworth, England

Filed Oct. 18, 1978, Ser. No. 952,412
Int. Cl.³ B65G *15/00, 65/00*
U.S. Cl. 414—749 **9 Claims**



1. A feed mechanism for transferring workpieces from a loading station to an unloading station, comprising:

a frame;

carrier means mounted on said frame for horizontal movement relative thereto and operative to grip a workpiece during its transference from the loading station to the unloading station;

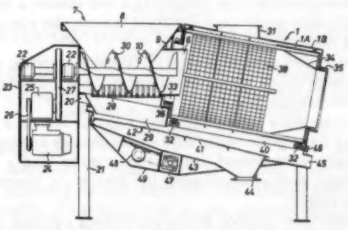
moving means operative to move said carrier means upwardly and downwardly with respect to said frame; a detection device mounted on said frame and including a pair of jaws having a predetermined clearance therebetween, said pair of jaws being disposed so that the workpiece must pass through said predetermined clearance when being transferred to the unloading station; and actuating means operative to arrest horizontal movement of said carrier means with respect to said frame in the event that the workpiece collides with said pair of jaws.

4,280,787

METHOD FOR HANDLING PALLETED LOADS COMPRISING BULK MATERIAL CONTAINED IN BAGS

Leif A. S. Henryson, Mörarp, Sweden, assignor to AB Bergu Jarn- & Rorkonstruktioner, Helsingborg, Sweden

Division of Ser. No. 808,756, Jun. 22, 1977, Pat. No. 4,182,592.
This application Jun. 21, 1979, Ser. No. 50,936
Claims priority, application Sweden, Jun. 28, 1976, 7607344
Int. Cl.³ B65G *65/04*
U.S. Cl. 414—786 **3 Claims**



1. A process for handling palleted loads of bulk material contained in bags, comprising the following steps, in combination and in sequence:

(1) dumping a plurality of bags of a pallet load together into a downwardly tapering receiving hopper having an inlet opening at the top thereof;

(2) guiding the bags while allowing the bags to fall downwardly by gravity into contact with the screw of a screw conveyor, the screw having a sharp edge at least in the area of the lower opening of the hopper, and having cutting and tearing means projecting outwardly;

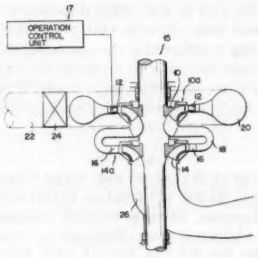
(3) rotating the conveyor screw and thereby cutting through and opening the bags received from said hopper;
(4) allowing some of the cut bag material and some of the bulk material to fall through grid means at the bottom of the housing of the screw conveyor, the grid means having a smooth inside surface formed by the innermost curved surfaces of said grid means, with said innermost surfaces being slightly spaced from said conveyor screw;
(5) separating the said bag and bulk materials from each other by a first separating means and feeding the rest of the bag material and bulk material axially towards the outlet and of the screw conveyor, in which the outlet end of the screw conveyor opens directly into an inlet of a second separating device for separating bag and bulk material; and
(6) separating the rest of the bag material.

4,280,788

MULTISTAGE HYDRAULIC MACHINE SYSTEM AND A METHOD FOR CONTROLLING THE OPERATION THEREOF

Sachio Tsunoda, and Ichiro Yamagata, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 3, 1979, Ser. No. 35,699
Claims priority, application Japan, May 22, 1978, 53-60850
Int. Cl.³ F01D *19/00, 27/12*
U.S. Cl. 415—1 **3 Claims**



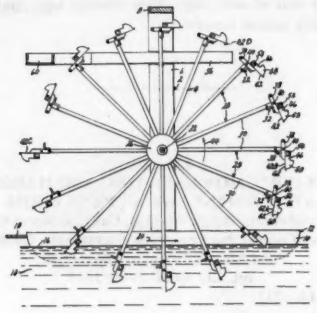
1. A multistage hydraulic machine system comprising:
a multistage hydraulic pump/pump-turbine having a water passage including
a highest-pressure stage comprising a first runner, a plurality of movable guide vanes arranged in a circular row around said runner,
operation and control means for varying opening of said movable guide means for flow of water through said water passage; and
a lower-pressure stage comprising a second runner, a plurality of fixed guide vanes with fixed openings arranged in a circular row around said second runner, and a return passage intercommunicating the highest- to lowest-pressure stages;
said operation control means controlling opening of said movable guide vanes so that said opening is larger than that of said fixed guide vanes for a large-flow normal operation and smaller than that of said fixed guide vanes for a small-flow normal operation
said operation control means further comprising means for supplying instructions during starting of said pump-/pump-turbine, stopping of said pump/pump-turbine, rejection of turbine load or failure of pump input and means for controlling the opening of said water passage of said movable guide vanes in response to operation control instructions received from said means for supplying instructions.

4,280,789

WATER ELEVATING WHEEL

Lester E. Graden, 1218 Lawrence Ave., Leavenworth, Kans. 66048

Filed Dec. 4, 1978, Ser. No. 965,832
Int. Cl.³ F03B *7/00*
U.S. Cl. 415—6 **2 Claims**



1. A water elevating device comprising:
a. a frame,
b. a buoyant barge capable of floating in a moving stream of water,
c. a wheel carried by said frame for rotation on a horizontal axis transverse to the stream current, at such an elevation that its lower portion is submerged in said stream,
d. paddles mounted on said wheel in spaced relation about the periphery thereof, whereby said wheel is turned by the current of said stream, each of said paddles being essentially planar in a plane transverse to the plane of the wheel, and being pivotally mounted on said wheel on a horizontal transverse axis for movement between an extended position, in which its plane extends generally radially outwardly from said wheel, and outwardly from its pivotal axis, to a retracted position trailing behind its pivotal axis in which its plane is disposed generally tangentially to the wheel, whereby each of said paddles pivots by gravity to said extended position at the descending side of said wheel, and to said retracted position at the ascending side of said wheel,
e. a bucket attached to the leading face of each of at least certain of said paddles so as to be filled with water when submerged in said stream, elevated above the water level of the stream by the turning of said wheel, and the water dumped therefrom in the upper portion of the wheel orbit by inversion thereof caused by rotation of the wheel, said bucket being mounted on the portion of said paddle extending radially outwardly from said wheel, and from the pivotal axis of said paddle, when the paddle is in its extended position, said bucket having a filling opening facing toward the pivotal axis of said paddle, and a discharge opening closer to the pivotal axis of said paddle than said filling opening, whereby said bucket fills when submerged, remains upright to retain water up to the level of said filling opening at the ascending side of said wheel, and dumps water through said discharge opening as said paddle approaches a horizontal plane at the top of said wheel, said filling opening being relatively widely spaced apart from the leading face of said paddle and said discharge opening being relatively closely adjacent said paddle whereby as the paddle approaches a horizontal plane water will flow through said discharge opening rather than said filling opening, said discharge opening of each of said buckets including a pair of spouts directed laterally outwardly from the respectively opposite sides of said bucket,
f. receptacles carried by said frame adjacent the upper por-

tion of said wheel, said receptacles comprising a pair of horizontal, open-topped troughs extending along respectively opposite sides of said wheel to receive water emerging from said spouts, and

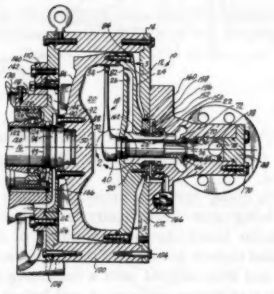
g. means operable to moor said barge against movement with the current of said stream, said mooring means comprising mooring lines connected to the upstream end of said barge and extending upstream therefrom, whereby said barge may shift laterally with any change in the current direction of said stream to align said wheel with said current.

4,280,790

CENTRIFUGAL PITOT PUMP WITH MEANS FOR IMPROVING NET POSITIVE SUCTION HEAD

Walter W. Crichlow, La Habra Heights, Calif., assignor to Kobe, Inc., Huntington Park, Calif.

Filed Feb. 26, 1979, Ser. No. 15,120
Int. Cl.³ F04D *1/14*
U.S. Cl. 415—89 **7 Claims**



1. In a rotary pitot pump of the type that includes a rotor casing, a rotor rotatably mounted in the casing and having a chamber, a pitot tube disposed within the chamber having a scoop to receive fluid and a passage from the scoop, a mounting duct extending from a stationary portion of the pump through the rotor and into the chamber, a passage in the duct communicating with the passage in the pitot tube for the discharge of fluid therefrom, an inlet into the rotor casing on the outside of the duct, a leak path between the chamber and the inlet along the interface between the rotor and the duct, and a plurality of radial passages from the inlet into the rotor chamber proper, an improvement which comprises:

an annular ring and a channel in the leak path between the rotor and the duct interrupting line-of-sight communication between the rotor chamber and the inlet, the annular channel receiving the ring and providing a flow path around the ring, the axial extent of the channel being greater than the axial extent of the ring.

4,280,791

BI-DIRECTIONAL PUMP-TURBINE

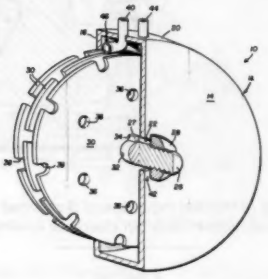
Gordon S. Gawne, 840 Roeser St., Freeland, Mich. 48623

Continuation-in-part of Ser. No. 906,486, May 17, 1978, Pat. No. 4,218,176. This application Dec. 20, 1978, Ser. No. 971,189
The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.
Int. Cl.³ F01D *1/36*
U.S. Cl. 415—90 **12 Claims**

1. In a fluid propulsion apparatus including a generally circular hollow housing, a shaft rotatably mounted in said housing, a plurality of spaced-apart circular discs mounted on the shaft for rotation therewith interiorly of said housing, said discs being concentric relative to said housing, a circumferential peripheral zone defined as the region between the interior of the housing and the periphery of said discs, a first fluid port means and a second fluid port means each of said first and second fluid port means extending through said housing and in communication with the interior thereof so that a fluid stream entering one of said port means flows through said housing in a spiral path and exits from the other of said port means, the improvement of a bi-directional pump-turbine comprising:

a third fluid port means extending through said housing and in communication with the exterior thereof so that a fluid stream can enter and exit from said third fluid port means;

said first and third fluid port means in communication with said peripheral zone and opening in opposite directions



therein relative to the axis of rotation of said shaft and said discs;

said first and third fluid port means each including an elongated pitot-like flow path having a first end and a second end, said first end lying in, and in communication with, said peripheral zone;

the cross-sectional area of the first end of each of said elongated flow paths being at least as large as the cross-sectional area of the second end of said flow path;

the first end of each of said elongated flow paths lying in a plane substantially normal to the flow path within said peripheral zone.

4,280,792

AIR-COOLED TURBINE ROTOR SHROUD WITH RESTRAINTS

Edward O. Hartel, Orange, and John N. Dale, Stratford, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Feb. 9, 1979, Ser. No. 11,041
Int. Cl.³ F04D *29/38*
U.S. Cl. 415—117 **25 Claims**

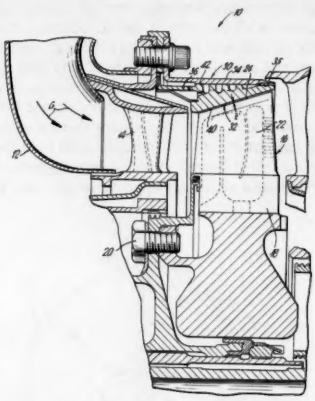
1. A stationary air-cooled shroud forming a portion of a turbine assembly and extending over and spaced from the tips of a plurality of blades of a rotor, said shroud comprising:

an inner ring having a radially inner surface and a radially outer surface, said inner surface being juxtaposed to and spaced from the blade tips, said outer surface of the inner ring having a matrix of grooves provided therein;

an outer restraining ring concentric with and surrounding the inner ring and covering said matrix of grooves to form a labyrinth of air-cooling passageways; and

a suspension ring which cooperates with the inner ring and the outer restraining ring to define an entry flow path for the cooling air provided to the labyrinth, said suspension ring and outer restraining ring defining a plenum chamber for receiving cooling air, said plenum chamber being in communication with the entry flow path leading to the

labyrinth whereby the passage of a flow of cool air through said labyrinth is operative to reduce the level and



gradient of thermal expansion of the shroud for obtaining improved turbine blade tip clearance control.

4,280,793

BORE HOLE PUMPS

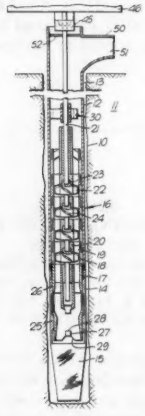
Hugh D. Nelson, Sydney, Australia, assignor to Mono Pumps Limited, Audenshaw, England

Filed Feb. 23, 1979, Ser. No. 14,478

Claims priority, application Australia, Feb. 23, 1978, 07344/78

Int. Cl.³ F04D *29/54*

U.S. Cl. 415—199.5 **7 Claims**



4. A bore hole pump assembly comprising a pump casing member; a plurality of interconnectable bore hole lining pipes, the lower most of said pipes being connectable directly to one axial end of the casing member; a turbine pump having a plurality of axially spaced turbine impellers and a plurality of stator bowl elements interposed between said impellers and each bowl element provided with fixed vanes thereon; a drive shaft at one axial end of the pump; a tubular housing at the other axial end of the pump; means defining two axially spaced internal seating surfaces on said pump casing member, means defining two axially spaced external seating surfaces on said tubular housing and co-operating with said internal seating surfaces of said pump casing member effective to align the tubular housing within said pump casing member, the housing being engageable in the pump casing member and being removable by movement towards said one axial end, whereby the lining pipes act as a discharge pipe of the pump.

4,280,794

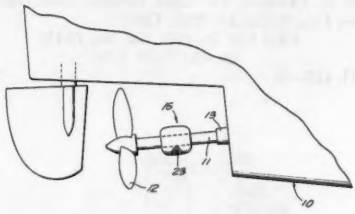
SACRIFICIAL ANODIC PROTECTOR KIT FOR A PROPELLER SHAFT

Wendell W. Goodwin, 4702 Coldbrook Ave., Lakewood, Calif. 90713

Filed Mar. 19, 1979, Ser. No. 21,334

Int. Cl.³ B63H *23/34*

U.S. Cl. 416—146 R **2 Claims**



1. A sacrificial anodic protector kit adapted for assembly to a propeller shaft to protect the same from elecrolytic attack consisting of:

a cast zinc collar having a cylindrical inner surface, said collar being split diametrically lengthwise thereof into two similar halves having a plurality of threaded nuts embedded therein inwardly of the mating surfaces of said halves and each aligned with a respective bore opening through said mating surfaces of said halves when assembled about a normally submerged portion of a propeller shaft;

the semi-cylindrical inner surface of said collar halves each being coated from end-to-end thereof with an electroplated copper layer, to a thickness of about 0.5 to 3 mils; and

separate machine screws insertable through respective ones of said bores and wrenchable into an associated one of said nuts to clamp said zinc castings to a propeller shaft with said copper layers in intimate electrical contact therewith.

4,280,795

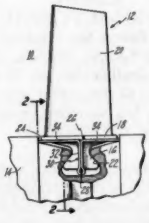
INTERBLADE SEAL FOR AXIAL FLOW ROTARY MACHINES

Edmund D. Trousdell, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1979, Ser. No. 107,296

Int. Cl.³ F01D *5/32*

U.S. Cl. 416—218 **3 Claims**



1. A blade root seal of the type utilized with a tangentially

loaded rotor having a circumferentially extending retaining slot for rotor blades, the seal comprising:

a wire adapted to be disposed at the bottom of the retaining slot; and

a plurality of interblade members attached to said wire and spaced therealong, one each for disposition between each pair of adjacent blades on the rotor wherein each interblade member is formed to a "T" shaped cross section including a first portion extending upwardly from the wire in a plane containing the wire and a second portion extending laterally from the first portion in a plane essentially perpendicular to the first portion.

4,280,796

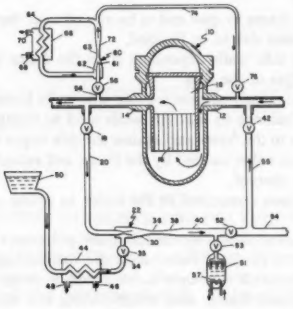
FLASH JET COOLANT CIRCULATION SYSTEM

Arnold O. W. Reinsch, 13140 Carousel Ln., Del Mar, Calif. 92014

Division of Ser. No. 684,853, May 10, 1976, abandoned. This application Jun. 30, 1978, Ser. No. 920,986

Int. Cl.³ B63H *16/00, 1/26*

U.S. Cl. 417—176 **1 Claim**



1. A system using the energy of heated water for pumping water into a vessel, the vessel having a water coolant inlet connection, the system comprising: in combination

flash jet pump means having a nozzle with converging and diverging sections connected to a source of heated water for flashing a portion of the water from said source of heated water into steam, said flashing taking place at least in said divergent section of said nozzle, and producing a high velocity two-phase flow,

a source of relatively cool water connected to said flash jet pump means for being drawn into said two-phase flow downstream of said divergent section of said nozzle,

the output of said flash jet pump being connected to the vessel,

steam jet pump means having a coolant inlet and having steam inlet which is connected to the vessel for utilizing any steam in the vessel to circulate coolant in a circulation loop,

condenser means comprising a mixing tube in which condensation shock occurs to produce condensed coolant downstream of said jet pump,

heat rejection means for extracting heat from at least a portion of said condensed coolant and returning at least a portion of said condensed coolant, from which heat has been extracted, to said coolant inlet of said steam jet pump, said steam jet pump means enhancing the operation of said flash jet pump means.

4,280,797

METHOD OF CONTROLLING THE SUPERCHARGE PRESSURE IN AN INTERNAL-COMBUSTION ENGINE, AND EXHAUST-GAS TURBOSUPERCHARGER FOR PERFORMING THE METHOD

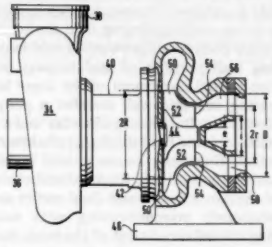
Horst Pfeil, Darmstadt, Fed. Rep. of Germany, assignor to Aktiengesellschaft Kühnle, Kopp & Kausch, Frankenthal, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,133

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2728024

Int. Cl.³ F04B *35/00, 29/44, 29/30*

U.S. Cl. 417—406 **2 Claims**



1. Exhaust-gas turbosupercharger for limiting supercharge pressure comprising an exhaust-gas turbine having a bladed rotor, a compressor operatively connected to said bladed rotor, and means for passing a flow of exhaust gas inwardly in substantially radial direction from the outside through respective entrances and exits of the rotor blades, said blades, respectively, being disposed at least partly, in longitudinal planes and, at a region of said exits of said blades, intersecting with a plane radial to said blades at an exit angle of at least 90° as measured on the pressure side of said blades, said blades having an entrance diameter and an exit diameter, and the ratio of the exit diameter to the entrance diameter of said blades is between 0.5 and 0.75.

4,280,798

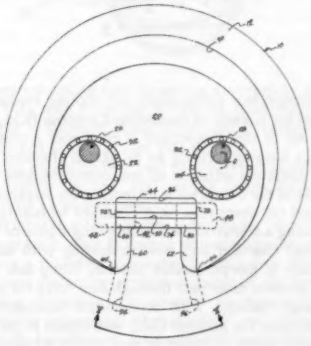
WORK MACHINE

James R. Gurley, Box 42, Rte. 5, Rutherfordton, N.C. 28139

Continuation-in-part of Ser. No. 5,964, Jan. 24, 1979, Pat. No. 4,227,506. This application Nov. 13, 1979, Ser. No. 93,737

Int. Cl.³ F01C *1/00*

U.S. Cl. 418—54 **18 Claims**



1. A work machine comprising a housing having a peripheral wall portion and spaced side wall portions defining an internal compartment having a peripheral lobe, an inner body in said compartment and having a peripheral portion defining

a corresponding peripheral lobe, means mounting said body in said compartment for non-rotational, orbital movement about a central axis of the compartment with the inner body lobe disposed for movement in the compartment lobe during orbital movement of the inner body, said mounting means including rotatable shaft means operatively attached to said inner body and having a rotatable shaft portion extending exteriorally of said housing for rotational movement about an axis during orbital movement of said inner body in said housing compartment, a recess in a peripheral portion of the inner body extending between adjacent ends of the inner body lobe, a wall member received in the inner body recess in sealing engagement with the inner body and housing and movable in response to orbital movement of said inner body to form with said housing and inner body a variable-volume chamber in said inner body recess for receiving and discharging fluid during orbital movement of the inner body; wall portions of said inner body sealingly engaging wall portions of said housing and said wall member during orbital movement of the inner body to form with said housing and said wall member a peripherally disposed variable-volume fluid intake chamber and a peripherally disposed variable-volume fluid discharge chamber in the housing compartment, fluid inlet means in said housing continuously communicating with said intake chamber during orbital movement of the inner body, and fluid outlet means in said housing continuously communicating with said discharge chamber during orbital movement of the inner body whereby fluid is introduced into said intake chamber and fluid is discharged from said discharge chamber and housing during orbital movement of said inner body and rotational movement of said shaft means.

4,280,799

COMPRESSOR WITH GUIDE BAFFLES AND GAS-PERMEABLE MATERIAL SEPARATING MEANS

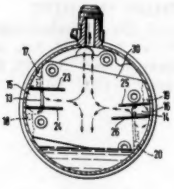
Hans-Dirk Struve, Bühlertal; Jürgen Hess, and Theodor Vysiotis, both of Baden-Baden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,089

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815471

Int. Cl.[3] **F04C** *29/02;* **B01D** *50/00, 45/06*

U.S. Cl. 418—97 **10 Claims**



1. In a compressor particularly for cooling media, having outlet means for streams of compressed gaseous fluid in which lubricating oil of the compressor is entrained, a combination comprising a housing forming an elongated chamber which is located immediately adjacent to and communicates with the outlet means of the compressor to receive the streams of gaseous fluid and oil therefrom, said chamber including an inlet opening having a center axis extending lengthwise of the elongation of said chamber and communicating with said outlet means; a body of gas-permeable material filling said chamber so that the streams must pass through said body on their way to a discharge opening, with concomitant separation of the entrained oil from the gaseous fluid; wall means in part bounding an oil sump space in a bottom part of said housing beneath said body, so that separated oil drips from said body into said oil sump space; and a plurality of guide baffles on said housing and projecting adjacent said outlet means in direction radially inwardly of said chamber towards but short of the center of the chamber, said guide baffles comprising at least two pairs of baffles located at opposite sides of said inlet opening, and the two baffles of each pair extending lengthwise of the direction of elongation of said chamber and being spaced from but substantially parallel to each other.

4,280,800

CONCRETE SLAB SURFACE FINISHING APPARATUS

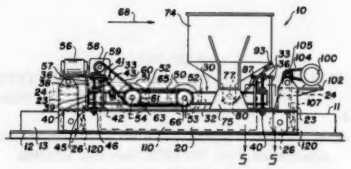
Christopher B. Bunn, North Vancouver, Canada, assignor to Dyform Engineering Limited, Vancouver, Canada

Filed Sep. 13, 1979, Ser. No. 74,842

Claims priority, application Canada, Oct. 28, 1977, 289831

Int. Cl.[3] **B28B** *1/26, 7/04;* **B29C** *1/00*

U.S. Cl. 425—62 **17 Claims**



1. Apparatus for finishing the surface of a concrete slab, comprising:

a support frame to span and to be moved over the surface of a concrete slab to be finished,

confining side walls depending from the frame to overlap side edges of the slab,

means swingingly suspending said side walls from the frame out of balance so that the walls tend to swing inwardly relative to the frame and against the side edges of the slab,

at least one roller carried by the frame and extending transversely thereof,

power means connected to the roller to rotate said roller, and

hopper means carried by the frame and positioned to deposit a layer of finishing material on the slab surface ahead of the roller with reference to the direction of movement of the support frame, said roller rolling out the finishing material on the slab surface and said side walls confining the finishing material on said surface.

4,280,801

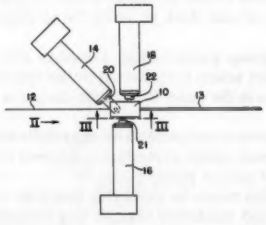
CROSSHEAD

Norton C. Wheeler, Jr., Mystic; John G. Seuferling, Norwich, and Simo A. O. Pennila, Rowayton, all of Conn., assignors to Crompton & Knowles Corporation, New York, N.Y.

Filed May 30, 1979, Ser. No. 43,923

Int. Cl.[3] **B29D** *23/04;* **B29F** *3/04*

U.S. Cl. 425—113 **14 Claims**



1. A crosshead including a die for extruding an annular layer of thermoplastic material about a central longitudinal axis comprising:

(a) an annular slotted die opening surrounding said longitudinal axis;

(b) an inlet passageway spaced from said longitudinal axis and located at one side of said crosshead for receiving molten thermoplastic material, said inlet passageway having a flow axis which is generally transverse to said longitudinal axis;

(c) an annular cavity located between said axis and the inlet passageway, and connected to the inlet passageway, said cavity surrounding said longitudinal axis and extending radially of said longitudinal axis, the cross-sectional area of said cavity gradually diminishing along each half of its circumference from the inlet passageway to a point on its circumference opposite the inlet passageway;

(d) an annular distribution passage located between said longitudinal axis and said annular cavity and connected to said annular cavity, said distribution passage surrounding said longitudinal axis and extending radially of said annular distribution axis, the depth of said longitudinal passage being substantially less than the depth of the annular cavity and the cross-sectional area of said distribution passage gradually diminishing along each half of its circumference from the inlet passageway to a point on its circumference opposite the inlet passageway; and

(e) an annular connecting passage surrounding said longitudinal axis and extending from the distribution passage to the die opening.

4,280,802

SCREW-TYPE EXTRUDER FOR POLYVINYLIDENE FLUORIDE FILAMENTS

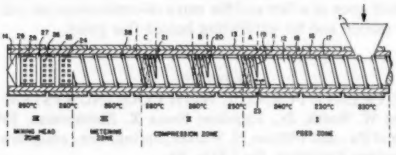
Egon Lang, Troisdorf-Oberlar, and Wilhelm Nachtigall, Troisdorf-Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Feb. 22, 1980, Ser. No. 123,645

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907074

Int. Cl.³ B29B *1/06*

U.S. Cl. 425—208 **20 Claims**



1. An apparatus for the continuous manufacture of filaments from polyvinylidene fluoride comprising a screw extruder with a single-spindle screw surrounded by a coaxial barrel with a feed zone, a compression zone, a metering zone, and a mixing head zone for the plasticizing of the polyvinylidene fluoride and with a die outlet tool for shaping the plasticized polyvinylidene fluoride into filaments, characterized in that the compression ratio of the screw is 1:1.2 to 1:2.5, that single-flight and double-flight sections of identical pitch are provided in alternating succession in the compression zone, and that the mixing head zone is provided with a plurality of alternatingly successive mixing zones and shear zones.

4,280,803

METHOD AND APPARATUS FOR THE PRODUCTION OF MOLDED MEAT OR MEAT-LIKE PRODUCTS

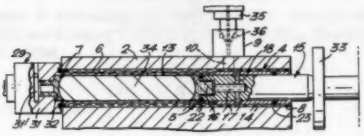
Timothy J. M. Treharne, East Grinstead, England, assignor to Trivet Developments Limited, West Sussex, England

Filed Sep. 13, 1978, Ser. No. 941,872

Claims priority, application United Kingdom, Sep. 14, 1977, 38395/77

Int. Cl.³ A21C *7/00, 11/04*

U.S. Cl. 425—99 **25 Claims**



1. Apparatus for producing a molded proteinaceous product of predetermined shape, said apparatus comprising:

(a) a rigid mold having an enclosed cavity which defines said predetermined shape of a molded proteinaceous product,

(b) means for injecting proteinaceous paste material into the cavity,

(c) the cavity having a wall at least a major part of which is fluid permeable, and

(d) means for introducing a fluid through the permeable cavity wall for treating at least a major portion of the surface of said product while in said predetermined shape.

4,280,804

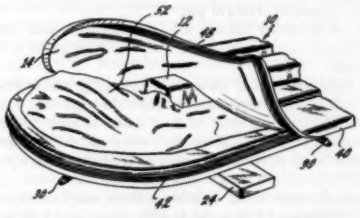
VACUUM CURING TOOL FOR COMPOSITE MATERIALS

Charles L. Holland, Escondido, Calif., assignor to General Dynamics, San Diego, Calif.

Filed Oct. 1, 1979, Ser. No. 81,020

Int. Cl.³ B29C *17/04*

U.S. Cl. 425—388 **3 Claims**



1. A vacuum curing tool for curing a workpiece comprising:

a rigid base with a top side having the desired configuration for the workpiece being cured and a vacuum manifold connected to the bottom side thereof;

a vacuum bag with one part of a peripheral sealing means attached to the bag, said sealing means having radially inwardly extending ribs;

said peripheral sealing means comprising two parts which engage each other in sealing relationship, one of said parts having a plurality of outwardly extending ribs and being disposed about the peripheral edges of the base, the outwardly extending ribs adapted to engage the radially inwardly extending ribs attached to said bag when brought together in wrap-around zipper-like fashion to form a seal for the bag; and

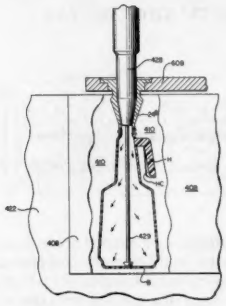
means for connecting said vacuum manifold to a vacuum source for withdrawing air from between said bag and the top side of said base during the curing operation on the workpiece disposed on the top side of said base.

4,280,805

INJECTION BLOW MOLDING APPARATUS

Robert X. Hafele, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 30, 1979, Ser. No. 71,301
Int. Cl.[3] B29C 17/07
U.S. Cl. 425—525 26 Claims



1. A multistation apparatus for injection blow molding a thermoplastic material to form a blow molded container having an integral injection molded handed, said apparatus comprising:

a. an injection molding station for forming a thermoplastic preform having an integral handle thereon, said molding station including,

i. a splite injection mold defining a preform cavity with a contiguous injection mold handle cavity, an injection mold carrier cavity, and an injection nozzle cavity, said preform cavity being between said injection mold cavity and said nozzle cavity and said injection mold handle cavity being contiguous at only a single point with said preform cavity,

ii. power means engaged with said split injection mold for opening and closing said split injection mold,

iii. a movable preform pin,

iv. an injection nozzle which nests into said injection nozzle cavity when said split injection mold is closed, and

v. injection power means for injecting, under pressure, molten thermoplastic material through said injection nozzle to a preform recess formed at least partially by said injection mold handle cavity and by said preform pin being positioned within said preform cavity;

b. a blow molding station having,

i. a split blow mold defining a blow mold cavity with a contiguous blow mold handle cavity and a blow mold carrier cavity, said blow mold cavity and said blow mold handle cavity having but a single contiguous point whereby said injection molded handle is prevented from achieving a second point of attachment to said blow molded container as said preform is blown in said blow mold cavity,

ii. power means engaged with said split blow mold for opening and closing said split blow mold, and

iii. a movable blow pin, said blow pin supplying pressurized gas to inflate said preform;

c. moving means for moving a preform carrier from station to station, said preform carrier having a portion to achieve attachment of said preform to said preform carrier when said preform is formed by said injection of thermoplastic material in said preform recess and having another portion which is in mounted relationship with said moving means at the time said attachment is achieved, and said preform carrier being

i. receivable into said injection mold carrier cavity and said blow mold carrier cavity, and

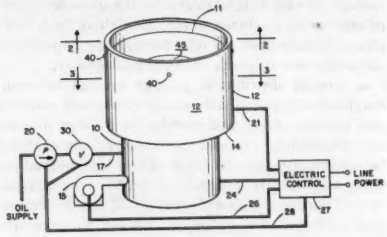
ii. hollow to allow passage through said preform carrier of said preform pin and to allow nesting of said blow pin in said preform carrier.

4,280,806

PREVAPORIZING OIL BURNER AND METHOD

Paul C. King, Leavitt Rd., Pittsfield, N.H. 03263

Filed Aug. 14, 1979, Ser. No. 66,385
Int. Cl.[3] F23D 11/44
U.S. Cl. 431—208 9 Claims



1. An oil burner which prevaporizes liquid fuel oil by heat in a vapor chamber prior to combustion in a separate combustion chamber comprising:

(a) a vapor chamber;

(b) means to introduce liquid fuel oil into said vapor chamber;

(c) heating means in said vapor chamber operable at a temperature sufficient to vaporize said liquid fuel oil;

(d) a first combustion chamber connected to said vapor chamber and divided from said vapor chamber by a perforated partition;

(e) fan means connected to said vapor chamber at an aperture near the bottom of said vapor chamber for moving vapor formed in said vapor chamber to said first combustion chamber;

(f) ignition means in said first combustion chamber for igniting vaporized fuel oil;

(g) at least two series of perforations in said first combustion chamber with a first series of perforations for introducing air and a second series of perforations for passing flames and flue gases;

(h) aperforated shell spaced around said first combustion chamber forming a second combustion chamber therebetween, said perforated shell being open at one end for passage of flue gases;

(i) a solid shell spaced around said perforated shell, said solid shell open at a first end for entry of combustion air and at a second end for exhausting heated flue gases.

4,280,807

AUTOCLAVE FURNACE WITH COOLING SYSTEM

Charles W. Smith, Jr., Fairview; Franz X. Zimmerman, Erie, both of Pa., and William H. Walker, Spring, Tex., assignors to Autoclave Engineers, Inc., Erie, Pa.

Division of Ser. No. 967,240, Dec. 7, 1978, Pat. No. 4,246,957.
This application Jun. 27, 1980, Ser. No. 163,434
Int. Cl.[3] F27B 5/04
U.S. Cl. 432—205 1 Claim

1. An apparatus for gas pressure bonding, hot isostatic pressing or the like in which the workpiece may be treated at elevated temperatures and pressures, said apparatus comprising

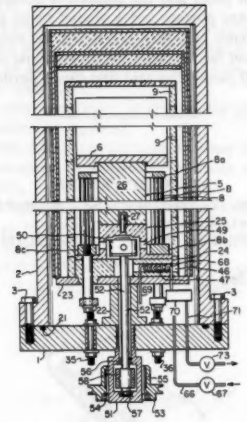
a cylindrical pressure vessel,

an insulating hood within the vessel for enclosing the workpiece,

a hearth upon which the workpiece rests, and

a heating element within the insulating hood, the improvement comprising

said hearth set upon a pedestal,
said pedestal having an impeller chamber at the base thereof with exhaust ports extending therefrom,
said pedestal set upon an insulating furnace floor cover having intake ports extending therethrough and in communication with said impeller chamber,



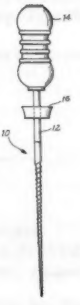
an exhaust conduit associated with at least one intake port and coiled along the walls of said intake port,
said conduit having an intake opening at one end within the vessel and passing through the vessel for exhausting the vessel atmosphere,
an impeller in said impeller chamber for circulating furnace atmosphere through said intake ports.

4,280,808

ENDODONTIC FILE HOLDER

James B. Johnsen, and Hal J. Oien, both of Portland, Oreg., assignors to Jordco, Inc., Portland, Oreg.

Filed May 6, 1980, Ser. No. 147,379
Int. Cl.³ A61C 1/14
U.S. Cl. 433—77 **6 Claims**



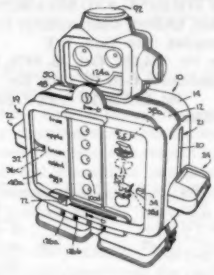
1. Finger ring apparatus for use in holding an endodontic file and the like, comprising
means defining an elongated double-open-ended socket,
elongated, resiliently deformable cushion means constructed to receive, releasably and at one of its ends, such a file which is inserted into said cushion means, said cushion means being adapted for deformed seating within said socket through travel of the cushion means inwardly relative to one end of the socket as a result of manipulation of that end of said cushion means which is opposite its said one end which extends through the outer socket end,
deformation of said cushion means with seating thereof producing friction locking between the cushion means and said socket, and
holding means joined to said socket-defining means constructed to be held by a user's hand.

4,280,809

EDUCATIONAL TOY

Lawrence J. Greenberg, 64 Mountain Ave., Larchmont, N.Y. 10538, and Gregory E. Hyman, 19 Sicard Ave., New Rochelle, N.Y. 10804

Filed Feb. 7, 1979, Ser. No. 9,872
Int. Cl.³ G09B 7/06
U.S. Cl. 434—343 **6 Claims**



1. A toy comprising:
(a) a housing;
(b) a first member mounted on said housing and selectively movable between a plurality of discrete positions on said housing, such positions constituting a first set;
(c) a second member mounted on said housing and selectively movable between a plurality of discrete positions on said housing, such positions constituing a second set, each position of said second set being associated with a position of said first set according to a predetermined pattern;
(d) means for displaying a plurality of symbols of a first type and a plurality of symbols of a second type, each such symbol of said second type being logically related to one of said symbols of said first type, so that each one of said symbols of said first type is displayed on said housing in alignment with one of the positions of said first set and each one of said symbols of said second type is displayed on said housing in alignment with the position of said second set which is associated, according to said predetermined pattern, with the position of said first set in alignment with which is displayed the logically related one of said symbols of said first type;
(e) a switch which is selectively manually actuable independent of the positioning of said members; and
(f) detection and signalling means operatively associated with said switch for detecting in an alignment-testing mode, the position of said first member and the position of said second member, and, responsive to actuation of said switch, emitting a first operator-perceivable signal if, at the time of such actuation, said first and second members are in associated positions, and emitting a second operator-perceivable signal different from said first operator-perceivable signal if, at the time of such actuation said first and second members are in non-associated positions, wherein said detection and signalling means includes output means for emitting a third operator-perceivable signal in the event that said switch is actuated while said first and second members are in non-associated positions, said third signal being indicative of the position of said

first set at which said first member is located at the time of such actuation, and wherein said output means includes a plurality of visual indicators, one of said visual indicators being positioned in alignment with each one of the positions of said second set, and said third signal includes actuation of the visual indicator which is aligned with the appropriate position of said second set, and wherein said detection and signalling means includes means operable in a randomizing mode for pseudorandomly selecting one of said visual indicators and, in response to actuation of said switch, actuating the visual indicator so selected, said toy further comprising manually operable control means for causing said detection and signalling means to operate either in said alignment-testing mode or in said randomizing mode, as selected by the operator.

4,280,810

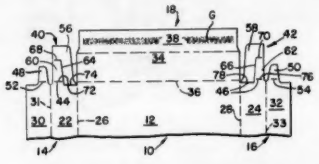
METHOD OF FOLDING AND SECURING A BOX COVER

Glenn E. Struble, Oxford, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Division of Ser. No. 954,687, Oct. 25, 1978, Pat. No. 4,214,694. This application Oct. 15, 1979, Ser. No. 85,136

Int. Cl.³ B31B *1/22, 1/26*

U.S. Cl. 493—356 **5 Claims**



1. A method of forming, assembling, and erecting a box cover or like member of pasteboard or like material with a top panel, fold over side walls, and fold over end walls, wherein each of the side and end walls includes an outer wall panel integral with the top panel, and an inner wall panel integral with and extending alongside a respective one of the outer side wall panels, wherein each of the outer side wall panels includes a corner assembly tab at opposite ends thereof, and each of the inner side wall panels includes a floating corner reinforcement tab at opposite ends thereof; said method comprising the steps of forming each of the corner assembly tabs on one of said outer side wall panels with a duplex hinge member between the outer side wall panel and the respective corner assembly tab with a first hinge portion and a second hinge portion formed between the outer side wall panel and the respective corner assembly tab but farther from the longitudinal midpoint of the outer side wall panel than said first hinge portion.

4,280,811

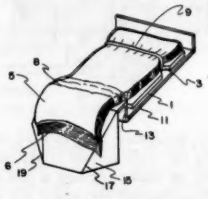
BAG DISPENSER

Milton A. Howe, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Jul. 2, 1979, Ser. No. 54,219

Int. Cl.³ B65H *1/04*

U.S. Cl. 493—386 **14 Claims**



1. A bag dispensing apparatus comprising:

dispensing surface means adapted to hold a stack of generally coinciding bags having edges;

pinching means adapted to pinch said stack of bags to said dispensing surface means; and

crimping means adapted to laterally crimp the edges of said stack of bags.

4,280,812

METHOD OF IMPARTING SMOLDER RESISTANCE TO COTTON-CONTAINING TEXTILES

Darrell J. Donaldson, and Robert J. Harper, Jr., both of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 21, 1980, Ser. No. 132,594
Int. Cl.[3] D06M *1/00*
U.S. Cl. 8—116 P 10 Claims

1. A process for imparting smolder resistance to cotton and cotton-containing fabric, the process comprising:

(a) preparing an aqueous solution of a mixture consisting of
(1) a boron compound,
(2) a compound containing an N-methylol group, and
(3) a phosphorus compound,

(b) applying the solution of (a) onto a cotton fabric or onto a cotton-containing fabric, to a wet-pickup of about from 15% to 100%,

(c) drying the impregnated fabric at a temperature of about from 120° to 185° F. for about from 10 to 2 minutes, respectively, and

(d) curing the dried fabric at a temperature of about from 225° to 300° F. for about from 7 to 1 minutes, respectively.

4,280,813

ANIMAL TATTOOING PASTE AND METHOD OF MAKING THE SAME

Warren H. DeGoler, 42 Ginger Cove Rd., Valley, Nebr. 68064

Filed Dec. 18, 1979, Ser. No. 104,813
Int. Cl.[3] D06P *1/613, 1/46*
U.S. Cl. 8—404 5 Claims

1. The method of manufacturing an improved animal carcass tattooing paste having substantially enhanced permanency when used to place identifying marks on carcasses, comprising the steps of:

(1) adding a polyoxyethylene derivative of a fatty acid partial ester of sorbitol anhydrides and an organic dye material, which is compatible with the other ingredients of the paste, to heated water and propylene glycol and mixing the same;

(2) adding mineral oil and a sorbitan mono fatty acid ester to a heated inorganic viscosity modifier and mixing the same;

(3) adding the mixture of step (2) to the mixture of step (1) and mixing the same;

(4) adding a thickening agent to the mixture and mixing the same; and

(5) packaging the product.

4,280,814

DYEING PROCESS AND COMPOSITIONS

Gary L. Bond, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,756
Int. Cl.[3] D06P *1/62, 1/48*
U.S. Cl. 8—588 8 Claims

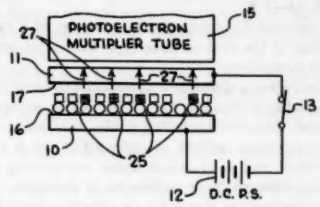
1. A dye composition comprising an admixture of finely ground azo or methine type dye component, from about ¼ to about 4/1 parts of ammonium lignin sulfonate/part of dye and from about 1/10 to about 5/1 parts of ammonium compound-/part of dye, wherein said ammonium compound is one or more ammonium sulfate, ammonium chloride, ammonium acetate, and ammonium hydroxide.

4,280,815

ELECTROCHEMILUMINESCENT IMMUNOASSAY AND APPARATUS THEREFOR

Bruce J. Oberhardt, Mishawaka, Ind., and Neil Wotherspoon, New York, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,818
Int. Cl.[3] G01N *21/62, 33/54*
U.S. Cl. 23—230 B 21 Claims



1. A method of immunoassaying a sample containing an immunoreactant comprising the steps of:

(a) forming a reaction mixture comprising said sample immunoreactant, a complementary immunoreactant, and a competitive immunoreactant with respect to said sample immunoreactant, said competitive immunoreactant having a chemiluminescent label attached thereto;

(b) confining said reaction mixture between a pair of electrodes;

(c) immobilizing said complementary immunoreactant adjacent one of said electrodes prior to the confining of said reaction mixture;

(d) incubating said reaction mixture to form a reaction product;

(e) applying a controlled voltage across said pair of electrodes for a controlled period of time to generate an oxidant for chemically triggering said chemiluminescently labelled competitive immunoreactant bound to said complementary immunoreactant in said reaction product; and

(f) measuring the chemiluminescence of said bound chemiluminescently labelled competitive immunoreactant.

4,280,816

MACROENCAPSULATED IMMUNOSORBENT ASSAY TECHNIQUE AND ELEMENT THEREFOR

Nasik Elahi, 41-77 Frame Pl., Flushing, N.Y. 11355

Filed Oct. 25, 1979, Ser. No. 87,928
Int. Cl.[3] G01N *33/54, 33/56*
U.S. Cl. 23—230 B 8 Claims

1. In a method for determining the presence and concentration of an antigen in a liquid medium by immunoassay wherein a supported antibody to said antigen is brought into contact for a predetermined time with said liquid medium in the presence of a quantity of said antigen which has been labelled to permit its detection, and thereafter determining by suitable detection means either the amount of said labelled antigen bound to said supported antibody or the amount of said labelled antigen in said medium, the improvement comprising providing said supported antibody as an element comprising particulate, supported antibody loosely encapsulated and confined within a rigid porous filter membrane having a pore size less than the size of said particulates, said element being of a substantially fixed, pre-determined volume such that said particulates agitate freely within said element.

8. An element comprising particulate, supported antibody loosely encapsulated and confined within a rigid porous filter membrane having a pore size less than the size of said particulates, said element being of a substantially fixed, pre-determined volume such that said particulates agitate freely within said element.

4,280,817

SOLID FUEL PREPARATION METHOD

Satya P. Chauhan; Herman F. Feldmann; Edgel P. Stambaugh, all of Worthington, Ohio, and Ke-Tien Liu, Allison Park, Pa., assignors to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 949,981, Oct. 10, 1978, abandoned.
This application Jun. 25, 1980, Ser. No. 162,979
Int. Cl.[3] C10L 9/02
U.S. Cl. 44—1 R 15 Claims

1. A process for treating solid particles of a raw carbonaceous fuel of the coal or coke type having an original sulfur content, comprising

(a) producing a slurry of a quantity of the raw fuel particles and a liquid medium comprising water, at least one alkali metal compound including a substantial amount of sodium or potassium sulfide or polysulfide or a combination thereof, and a chemical agent comprising calcium or magnesium oxide or carbonate, or dolomite,

(b) subjecting the slurry for an effective period of time to elevated temperature and pressure effective with the alkali metal compounds and water to cause the medium to penetrate the microscopic structure of the particles and to chemically and physically incorporate a substantial amount of the chemical agent into the structure,

(c) separating the readily separable medium from the fuel particles and washing the particles to remove most of the alkali metal therefrom while producing a particulate fuel product containing a substantial amount of the chemical agent therein,

(d) adding most of the separated medium to the slurry produced in step (a),

(e) adding to the medium or the slurry a sufficient quantity of the chemical agent to replace the chemical agent removed from the slurry with the particulate fuel product,

(f) adding more raw fuel particles to the medium or the slurry, and

(g) continuing to carry out steps (b-f) with a multiplicity of new additions of the raw fuel particles and with a multiplicity of reuses of the separated medium to produce fuel product particles containing a quantity of sulfur that is not substantially less than the original sulfur content, in addition to the chemical agent.

4,280,818

NOVEL COMPOSITIONS OF MATTER AND PROCESS FOR UTILIZING SAME

Johann G. Schulz; John J. Stanulonis, both of Pittsburgh, and William R. Wajert, Delmont, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 22, 1980, Ser. No. 123,921
Int. Cl.[3] C10L 1/02
U.S. Cl. 44—56 41 Claims

1. A process for producing a novel composition of matter which comprises oxidizing a hydrocarbon oil with aqueous nitric acid, separating from the resulting oxidation product an aqueous phase and an oxidized hydrocarbon phase as the novel composition of matter.

26. Process for operating a furnace or combustion engine which comprises burning in said furnace or said combustion engine a novel fuel composition comprising (1) a novel composition of matter obtained by oxidizing a hydrocarbon oil with aqueous nitric acid, separating from the resulting product an aqueous phase and an oxidized hydrocarbon phase and then extracting said oxidized hydrocarbon phase with at least one organic polar solvent to obtain an extract as the novel composition of matter and (2) an organic polar solvent.

28. The process of claim 26 wherein said first named polar solvent is ethanol.

4,280,819

DIESEL FUEL COMPOSITIONS CONTAINING CERTAIN AZIDES FOR IMPROVED CETANE NUMBER

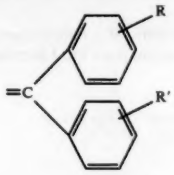
Robert J. Hartle, Gibsonia, and Gary M. Singerman, Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 30, 1980, Ser. No. 145,369
Int. Cl.[3] C10L 1/22
U.S. Cl. 44—64 9 Claims

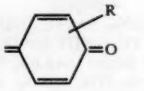
1. An improved fuel composition comprising a major amount of a hydrocarbon fuel oil selected from the group consisting of diesel fuel and jet fuel and a minor amount sufficient to increase the cetane number of the fuel of an additive compound having the following structural formula:

$$X{=}N^{+}{=}N^{-}$$

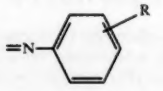
where X is selected from the group consisting of:



(i)



(ii)



(iii)

where R and R′ can be the same or different and are selected from the group consisting of hydrogen; alkyl straight- and branched chain hydrocarbons having from 1 to 8 carbon atoms; alkoxy groups having from 1 to 8 carbon atoms; aryl; aryloxy; nitro; hydroxy; halo amino in a position meta or para to the azido; alkylamino; acyl groups having from 2 to 8 carbon atoms; alkylamido; and alkoxy carbonyl.

4,280,820

STEAM REFORMING PROCESS

Reginald G. S. Banks, Olton, and Alan Williams, Cheswick Green, both of England, assignors to British Gas Corporation, London, England

Division of Ser. No. 923,550, Jul. 11, 1978, Pat. No. 4,216,123.
This application Feb. 8, 1980, Ser. No. 119,979
Claims priority, application United Kingdom, Jul. 11, 1977, 5655/77
The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.
Int. Cl.[3] C10G 11/02
U.S. Cl. 48—214 A 8 Claims

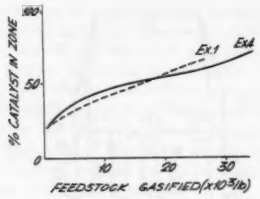
1. A process for the production of methane-containing gases, said process including the steps of

passing a mixture of steam and the vapor of a hydrocarbon feedstock having a boiling range up to that of gas oils over a coprecipitated catalyst such that a reaction therebetween occurs, said coprecipitated catalyst comprising a metal of Group VIII of the Periodic Table, alumina and optionally, minor amounts of an alkali or alkaline earth metal, wherein, in the calcined but unreduced form of the catalyst:

(i) at least 55% of the pore volume of pores having a pore

radius of between 12 and 120 Angstrom Units is in the range of 12 to 30 Angstrom Units, and

(ii) the ratio (Q) of the pore volume contained in pores of radius 10 to 50 Angstrom Units to pore volume contained in pores of radius 50–300 Angstrom Units is at least 5:1, and



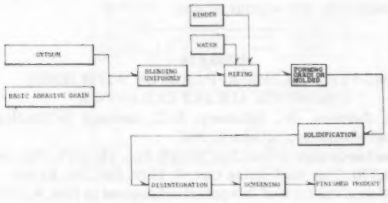
controlling the physical conditions of said mixture and said catalyst such that said reaction is conducted at an elevated pressure and at a temperature of from 350° to 650° C. at the upstream end of said catalyst and at least 450° C. at the downstream end of said catalyst.

4,280,821

DISINTEGRABLE LUMP ABRASIVE GRAINS AND PROCESS FOR PRODUCING SAME

Liao Chin-Chi, No. 42, Chi Shih St., Tai-Chung City, Taiwan

Filed Oct. 2, 1979, Ser. No. 81,116
Int. Cl.³ C09K *3/14*
U.S. Cl. 51—298 **7 Claims**



1. Process of producing an abrasive composition in lump form for use as polishing and buffing agent, comprising the steps of:

uniformly mixing grains of abrasive material with gypsum, adding water and a binder selected from the group consisting of water glass, methyl cellulose, glue, polyvinyl alcohol and polyvinyl acetate to solidify the mixture,

disintegrating the solidified mixture to produce lumps containing said grains of abrasive material, and

screening said lumps to selected size.

4,280,822

METHOD FOR PRODUCTION OF ABRASIVE COMPOSITION FOR USE IN TOOTHPASTE

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 946,678, Sep. 28, 1978, Pat. No. 4,244,707, which is a division of Ser. No. 826,901, Aug. 24, 1977, Pat. No. 4,159,280, which is a continuation-in-part of Ser. No. 723,345, Sep. 15, 1976, abandoned. This application Mar. 28, 1980, Ser. No. 134,817
Int. Cl.³ C09C *1/02, 1/68*
U.S. Cl. 51—308 **9 Claims**

1. A method for the production of an abrasive composition useful for incorporation into a theraupeutic toothpaste composition and for preventing fluoride-caused corrosion and staining of an unlined aluminum tube containing said toothpaste composition, said abrasive composition comprising a silica which has been treated with a water-soluble alkaline earth metal compound so as to have present therein from about 168–7000 ppm of the alkaline earth metal, said silica being an amorphous precipitated silica and functioning as a carrier for the alkaline earth metal;

said method comprising the following sequence of steps:

(a) forming an aqueous solution of an alkali metal silicate having an SiO_2 to X_2O mole ratio of about 2.0 to 2.7 and of an alkali metal sulfate at a reaction temperature in the range of about 66° to 83° C., wherein X represents the alkali metal;

(b) acidulating said aqueous solution with a mineral acid with continuous agitation until precipitation of silicon dioxide is substantially complete at a pH of about 8.0 to 10.4;

(c) continuing the mineral acid addition until the pH is 6.0 or less;

(d) digesting at a temperature that is 10°–30° C. higher than the reaction temperature for a period of about 10 to 30 minutes;

(e) filtering the resulting slurry and washing the solid product with fresh water;

(f) reslurrying the resulting wet cake in water, and under agitation conditions, adding thereto at ambient temperature a water soluble alkaline earth metal compound in an amount sufficient to add to said wet cake from about 168–7000 ppm of the alkaline earth metal based on the dry recoverable product;

(g) agitating the resulting mixture to provide adherence of the effective level of said metal on the surface of said silicon dioxide; and

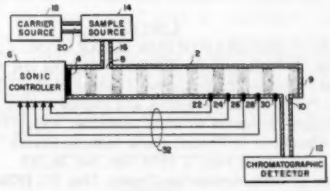
(h) drying and recovering said abrasive composition.

4,280,823

METHOD AND APPARATUS FOR SONIC SEPARATION AND ANALYSIS OF COMPONENTS OF A FLUID MIXTURE

Eugene L. Szonntagh, Flourtown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 13, 1979, Ser. No. 93,456
Int. Cl.³ B01D *51/08;* G01N *31/08*
U.S. Cl. 55—15 **10 Claims**



1. An apparatus for separating fluid components of a fluid mixture comprising:

a closed chamber of uniform cross-section,

sonic generator means for introducing sonic waves in said chamber,

an entrance port into said chamber located adjacent to said sonic generator means,

carrier fluid source means,

sample fluid source means connected between said carrier souce means and said entrance port for supplying a fluid sample having a mixture of at least two components, said carrier source means being arranged to supply a carrier fluid to sweep a sample fluid from said sample source means into said chamber through said entrance port and

exit port means for said chamber located remotely from said entrance port means, said carrier fluid urging said fluid sample through said chamber to separate said fluid com-

ponents by said sonic waves and ultimately through said exit port means.

4,280,824

PROCESS FOR PROVIDING A FEED GAS FOR A CHEMICAL REACTION AND FOR THE SEPARATION OF A GASEOUS REACTION PRODUCT

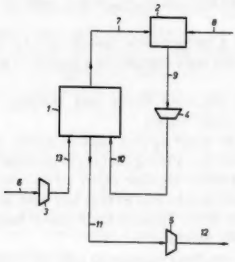
Eberhard Lassmann, Herrnhausen, and Christian Benkmann, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 14, 1979, Ser. No. 103,773

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2854060

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **17 Claims**



1. An improved process for providing a feed gas for a chemical reaction and for separating a gaseous reaction product from the gaseous mixture obtained from a reaction to which the feed gas is submitted, wherein the feed gas is obtained by the fractionation of a crude gas mixture containing the feed gas, as well as a carrier gas or carrier gas mixture, and in which the feed gas is reacted only incompletely in the reaction, and wherein the unreacted proportion is to be recycled into the reaction, the improvement comprising conducting the fractionation of the crude gas mixture and the separation of the gaseous reaction product in the same adsorption plant containing cyclically reversible adsorbers, and operating by the pressure swing method.

4,280,825

VERTICAL SEPARATOR FOR SEPARATING LIQUID OR SOLID PARTICLES FROM A VAPOR OR A GAS

Jacques Marjollet, Paris; Gerard Tondeur, Velizy-Villacoublay; Jean-Pierre Cerdan, Houilles, and Patrick Talleu, Chatou, all of France, assignors to Stein Industrie, Velizy-Villacoublay and Electricite de France, Paris, both of, France

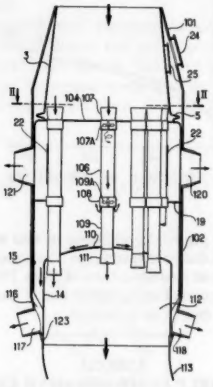
Filed May 7, 1979, Ser. No. 36,703

Claims priority, application France, May 12, 1978, 78 14212; Apr. 6, 1979, 79 08784

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—203 **11 Claims**

1. A vertical separator for separating liquid or solid particles from a mixture of the particles and a vapour or gas, said separator including, a cylindrical outer casing, a transverse spacer plate expanding across the interior of said outer casing and defining an upper chamber inside said outer casing for admitting the mixture, a plurality of vertical tubes, said tubes having ends protruding upwardly through said spacer plate and being provided with fixed blades at said ends which impart a helical movement to the mixture and outlets at their lower ends for said tubes provided with a coaxial tube of reduced diameter and being an inner tube which allows dry vapour or gas to be removed by said inner tube and a mixture containing a higher proportion of liquid or solid particles to be removed in the annular space between said inner and outer tubes which leads into a free chamber where said mixture containing a higher proportion of liquid or solid particles is separated into substantially dry vapour or gas and a fluid which contains little vapour or gas, and said inner tubes leading into a dry vapour or gas collecting chamber, the improvement wherein at the bottom of said free chamber, the separator has an upwardly convex bottom forming with said outer cylindrical casing a narrow annular space for collecting the fluid which has a low vapour or gas



content and passages which are regularly disposed between the tubes and which allow the substantially particle-free vapour or gas to escape upwards between said vertical tubes, and discharge tubes opening radially through said outer casing to said free chamber, above said narrow annular space, for removing said substantially dry vapour or gas.

4,280,826

BAG-TYPE FILTER APPARATUS WITH HIGH PRESSURE AIR JET CLEANING

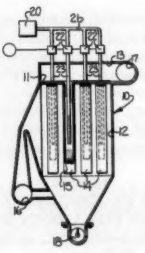
Allen S. Johnson, Jr., Salisbury, N.C., assignor to Staclean Diffuser Company, Salisbury, N.C.

Continuation-in-part of Ser. No. 76,605, Sep. 18, 1979, Pat. No. 4,231,770. This application Oct. 3, 1979, Ser. No. 81,461

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—302 **10 Claims**



1. In a filter apparatus of the type wherein a particulate-laden gas is directed through a tubular filter bag for filtering and retaining the particulate material on the exterior of the bag, with the filtered air being discharged from one end of the filter bag, a tubular supporting cage positioned within the filter bag and supporting the filter bag thereon, and said filter apparatus also having a cleaning system including a compressed air control valve communicating with a compressed air source for periodically discharging pulses of compressed air for cleaning and removing accumulated particulate material from the filter

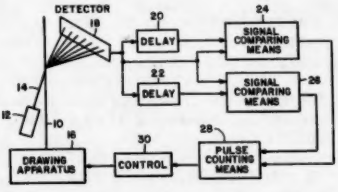
bag, the combination therewith of an elongate air distributor pipe having one end communicatively connected to said control valve for receiving the periodic pulses of compressed air therefrom, said elongate air distributor pipe extending into said one end of the filter bag and also into said filter bag supporting cage and being positioned longitudinally along the interior of said supporting cage and filter bag, and said air distributor pipe having a plurality of air outlet openings therein for distributing the compressed air throughout the interior of the filter bag, and an elongate hollow diffuser tube extending longitudinally within said tubular supporting cage and said filter bag in surrounding relation to said air distributor pipe, said diffuser tube having perforations therein for diffusing and further distributing throughout the filter bag the compressed air which is discharged from said air distributor pipe to thus more effectively clean the filter bag and provide a substantial increase in the efficiency of the filter apparatus.

4,280,827

SYSTEM FOR MEASURING OPTICAL WAVEGUIDE FIBER DIAMETER

Edward F. Murphy, Wrightsville Beach, N.C., and James R. Portzer, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,011
Int. Cl.³ C03B *37/02*
U.S. Cl. 65—11 W **4 Claims**



1. A signal processing system in combination with apparatus for drawing an optical fiber comprising

means for directing a beam of monochromatic light onto said fiber, thereby creating a light interference patern and light detecting means for producing an electrical signal corresponding to said interference patern,

source means providing an input signal having a sinusoidal component,

first and second delay circuits connected to said source means, said first delay circuit providing a first delayed signal which is delayed a given amount, said second delay circuit providing a second delayed signal which is delayed an amount different from said given amount,

first signal comparing means connected to said source means and said first delay circuit for providing output pulses when the amplitude of said input signal exceeds that of said first delayed signal and when the amplitude of said first delayed signal exceeds that of said input signal,

second signal comparing means connected to said source means and said second delay circuit for providing output pulses when the amplitude of said input signal exceeds that of said second delayed signal and when the amplitude of said second delayed signal exceeds that of said input signal,

means for counting the output pulses from said first and second signal comparing means, and

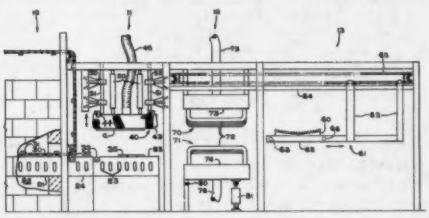
means for utilizing the output of said counting means.

4,280,828

SHAPING GLASS SHEETS BY DROP FORMING WITH PRESSURE ASSIST

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 960,404, Nov. 13, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,423
Int. Cl.² C03B *23/025*
U.S. Cl. 65—106 **7 Claims**



1. A method of shaping glass sheets, comprising the steps of:

heating a glass sheet to approximately its softening point within a heating chamber;

withdrawing the heat-softened glass sheet from the heating chamber and supporting it in an essentially horizontal orientation on support means;

bringing the upper surface of the glass sheet into close proximity to a flat platen in communication with a source of vacuum;

drawing a vacuum through the platen so as to retain the glass sheet on the platen;

vertically separating the platen and the glass sheet carried thereon from the support means;

bringing into vertical alignment with and beneath the glass sheet held on the platen a shaping mold having a contour defining the desired contour for the glass sheet, and bringing the shaping mold to rest a substantial distance below the glass sheet so as to establish a sufficient dropping distance to shape the glass sheet upon impact with the shaping mold; and

rapidly replacing the vacuum in the platen with positive pressure so as to propel the glass sheet from the platen toward the shaping mold with an acceleration greater than the acceleration of gravity, and impacting the shaping mold with the glass sheet with sufficient force to immediately bend the glass sheet to substantially its final shape upon impact with the shaping mold, whereby the glass sheet is shaped in accordance with the contour of the shaping mold.

4,280,829

APPARATUS FOR CONTROLLING INTERNAL PRESSURE OF A BAIT TUBE

Kalapi D. Sheth, Houston, Tex., assignor to Corning Glass Works, Corning, N.Y.

Filed May 12, 1980, Ser. No. 148,953
Int. Cl.³ B05C *7/00*; B05D *7/22*
U.S. Cl. 65—158 **4 Claims**

1. In an apparatus for depositing a layer of glass on the inner surface of a glass bait tube comprising

means for rotatively supporting said tube,

means for introducing an input gas into said tube,

means for receiving exhaust gas flowing from one end of said tube,

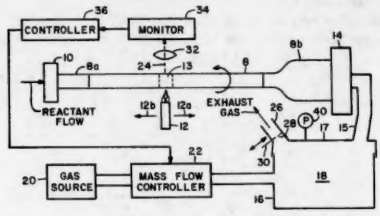
means for heating said tube to form a hot zone therein,

means for monitoring the diameter of said tube in the region of said hot zone, and

means for controlling the pressure within said tube, thereby controlling the outer diameter of said tube,

said means for controlling being characterized in that it comprises

means defining a chamber,



means connecting said means for receiving exhaust gas to said chamber, and

means responsive to said monitoring means for controlling the pressure within said chamber.

4,280,830

UREA-FORMALDEHYDE GRANULAR FERTILIZER

Fred E. Ferguson, Marysville; Rory R. Hughes, Westerville, and Kenneth E. Fersch, Marysville, all of Ohio, assignors to O. M. Scott and Sons Company, Marysville, Ohio

Filed Jan. 23, 1980, Ser. No. 114,638
Int. Cl.³ C05F *11/00*
U.S. Cl. 71—25 **14 Claims**

1. A fertilizer composition comprising

free flowing granules, said granules comprising expanded, substantially oil-free coffee grounds as a carrier, said coffee grounds being the residue of coffee beans remaining after extraction of soluble components, said coffee grounds being coated and impregnated with a urea-formaldehyde condensation product, the ratio of urea to formaldehyde in said condensation product ranging from 1 to 3 moles of urea for each mole of formaldehyde, said composition having at least 15% of the total nitrogen in cold water insoluble form.

8. A process for preparing a fertilizer composition comprising

producing an aqueous solution of methylol urea by reacting urea and formaldehyde in an alkaline solution in which the ratio of urea to formaldehyde ranges from 1 to 3 moles of urea for each mole of formaldehyde,

contacting substantially oil-free coffee grounds with said aqueous solution of methylol urea to expand said coffee grounds and to coat and impregnate the expanded coffee grounds with said methylol urea, said coffee grounds being the residue of coffee beans remaining after extraction of soluble components, and

acidifying said methylol urea while coated and impregnated on said coffee grounds to form by condensation therefrom a urea-formaldehyde condensation product, whereby a free-flowing granular fertilizer composition is produced having at least 15% of the total nitrogen in cold water insoluble form.

4,280,831

BENZYLSULFONYL DIETHYLCARBAMYL TRIAZOLE AND USE AS A SELECTIVE HERBICIDE

Natu R. Patel, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1980, Ser. No. 174,975
Int. Cl.³ A01N *47/38*; C07D *249/12*
U.S. Cl. 71—92 **6 Claims**

1. The method of selectively combating unwanted vegetation which comprises applying pre-emergently to the locus of the unwanted vegetation an effective amount of a herbicidal composition which comprises from 0.1 percent to 95 percent by weight 3-benzylsulfonyl-1-diethylcarbamoyl-1,2,4-triazole and from 0.1 to 75 percent by weight of a carrier or surfactant.

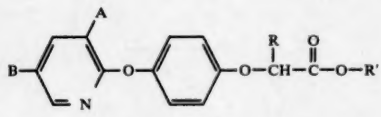
4,280,832

PYRIDYLOXY-PHENOXYALKANE CARBOXYLIC ACIDS AND DERIVATIVES AS SUGAR ENHANCERS FOR PLANTS

John F. Koerwer, Perkasie, Pa., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,851
Int. Cl.³ A01N *43/40*
U.S. Cl. 71—94 **70 Claims**

1. A method for increasing the sugar content of plants which comprises applying to such plants from 1 to 7 weeks prior to harvesting an effective amount of a compound of the formula.



wherein:

A is a hydrogen atom or a halogen atom,

B is a hydrogen atom or a halogen atom,

R is a hydrogen atom or a methyl group, and

R' is a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, or a cation;

provided, however, that either A or B must be a halogen atom.

4,280,833

ENCAPSULATION BY INTERFACIAL POLYCONDENSATION, AND AQUEOUS HERBICIDAL COMPOSITION CONTAINING MICROCAPSULES PRODUCED THEREBY

George B. Beestman, Creve Coeur, and John M. Deming, Hazelwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 26, 1979, Ser. No. 23,566
Int. Cl.³ A01N *37/18, 37/22*; B01J *13/02*
U.S. Cl. 71—100 **29 Claims**

1. A process for producing a composition consisting essentially of a mixture of water and microcapsules containing a water-immiscible material within a shell wall of polyurea, which process comprises:

(a) providing an aqueous phase containing an emulsifier selected from the group consisting of the sodium, potassium, magnesium, calcium and ammonium salts of lignin sulfonate;

(b) dispersing in said aqueous phase, a water-OOCH immiscible phase consisting essentially of polymethylene polyphenylisocyanate dissolved in said water-immiscible material, to form a dispersion of water-immiscible phase droplets throughout the aqueous phase;

(c) adding, with agitation, to said dispersion a polyfunctional amine whereby said amine reacts with polymethylene polyphenylisocyanate to form a polyurea shell wall about said water-immiscible material.

19. A herbicidal composition consisting essentially of a mixture of water and microcapsules containing a water-immiscible herbicide, said mixture being produced by a process which comprises the steps of:

(a) providing an aqueous phase containing an emulsifier selected from the group consisting of the sodium, potassium, magnesium. calcium and ammonium salts of lignin sulfonate;

(b) dispersing in said aqueous phase, a water-immiscible phase consisting essentially of polymethylene polyphenylisocyanate dissolved in said water-immiscible herbicide, to

form a dispersion of water-immiscible phase droplets throughout the aqueous phase;

(c) adding, with agitation, to said dispersion a polyfunctional amine whereby said amine reacts with polymethylene polyphenylisocyanate to form a polyurea shell wall about said water-immiscible herbicide;

(d) wherein the concentration of said water-immiscible herbicide is from about 480 grams to about 700 grams per liter of said composition, wherein the concentration of polymethylene polyphenylisocyanate is from about 3.5% to about 21.0% by weight of said water-immiscible material, wherein the concentration of said polyfunctional amine is from about 1.5% to about 9.0% by weight of said water-immiscible herbicide, and wherein the concentration of said emulsifier is from about ½% to about 15% by weight of said water-immiscible herbicide.

4,280,834

NOVEL DIPHENYL ETHER DERIVATIVE AND HERBICIDAL COMPOSITION CONTAINING THE SAME AS AN ACTIVE COMPONENT

Kenji Kobayashi, Ageo; Katuhiko Hibi, Fukiage; Hisabumi Kobayashi, and Shoichi Kato, both of Ageo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1980, Ser. No. 123,025

Claims priority, application Japan, Mar. 9, 1979, 54-26631

Int. Cl.³ A01N *41/10*; C07C *147/06*

U.S. Cl. 71—103 **3 Claims**

1. 3-n-propylsulfonylphenyl 4'-trifluoromethylphenyl ether.

2. An herbicidal composition which comprises an effective amount of 3-n-propylsulfonylphenyl 4'-trifluoromethylphenyl ether as an active ingredient, and a carrier and other adjuvants.

4,280,835

HERBICIDAL N-PHENYL-N-METHYLUREA DERIVATIVES

Takemoto Ichiki, Takarazuka; Ryo Yoshida, Kawanishi; Seizo Sumida, Nishinomiya, and Kamoshita Katsuzo, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

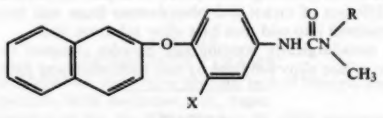
Filed Dec. 6, 1978, Ser. No. 967,018

Claims priority, application Japan, Dec. 13, 1977, 52-150377; Dec. 17, 1978, 53-128096

Int. Cl.³ A01N *47/30*

U.S. Cl. 71—120 **9 Claims**

1. A herbicidal composition, which comprises as an active ingredient a herbicidally effective amount of a compound of the formula:



wherein X is a hydrogen atom, a halogen atom or a trifluoromethyl group and R is a methyl group or a methoxy group, and an inert carrier.

4,280,836

METHOD OF PREHEATING IRON SCRAPS IN STEEL-MAKING BY THE ELECTRIC ARC FURNACE

Yukimasa Maeda, Osaka, Japan, assignor to Kyoei Steel Ltd., Osaka, Japan

Filed Jun. 2, 1980, Ser. No. 155,094

Int. Cl.³ C21C *5/52*

U.S. Cl. 75—12 **3 Claims**

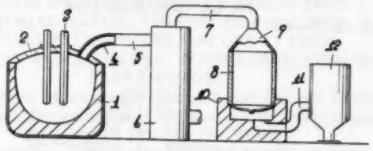
1. A method of preheating iron scraps in steel-making by an electric arc furnace comprising the steps of:

a. burning combustible substances included in high-temperature exhaust gases generated in an electric arc furnace to render the gas non-explosive;

b. directing the non-explosive high-temperature exhaust gases into a charging bucket to preheat iron scraps in the charging bucket up to a predetermined temperature;

c. supplying said preheated iron scraps into the electric arc furnace;

d. directing any malodorous gases generated by the evaporization of elements stuck to the iron scraps in the electric



arc furnace, which gases are emitted directly from the electric furnace and charging bucket into a deodorizing apparatus; wherein the deodorization is effected by pyrolysis or burning of the malodorous elements in the exhaust gases;

e. directing the deodorized gases into a dust removing machine; and

f. discharging the thus-deodorized gases into the atmosphere.

4,280,837

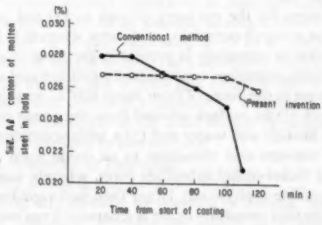
METHOD FOR CONTINUOUSLY CASTING SLAB FOR MANUFACTURING GRAIN-ORIENTED ELECTRICAL STEEL SHEET AND STRIP

Morio Shiozaki, Himejishi; Mitsuaki Kawashima; Yoshiaki Shimoyama, both of Kitakyusyushi, and Nobuoki Ishihara, Nogatashi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 31, 1979, Ser. No. 90,072

Int. Cl.³ B22D *27/00*

U.S. Cl. 75—54 **4 Claims**



1. In a method for continuously casting a slab for manufacturing a grain-oriented electrical steel sheet and strip, the improved method comprising:

(1) transferring molten steel prepared for continuous casting and containing not more than 4.0% of Si, 0.01–0.08% of Al and 0.01–0.06% of S to a ladle or other vessel;

(2) adjusting a slag in said ladle or other vessel, said slag consisting essentially of SiO_2, CaO and Al_2O_3 on the surface of the molten steel to maintain the ratio of Al_2O_3 to SiO_2 of the slag at not less than 0.25, and the Al_2O_3 to CaO of the slag at not less than 1.0, and

(3) continously casting the molten steel.

4,280,838

PRODUCTION OF CARBON STEEL AND LOW-ALLOY STEEL WITH BOTTOM BLOWING BASIC OXYGEN FURNACE

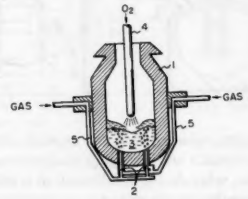
Katsukiyo Marukawa; Isao Yamazaki; Syoji Anezaki, all of Ibaraki, and Tsutomu Kajimoto, Wakayama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Japan

Filed May 9, 1980, Ser. No. 148,530

Claims priority, application Japan, May 24, 1979, 54-64221; May 24, 1979, 54-64222

Int. Cl.[3] C21C 5/32, 5/34

U.S. Cl. 75—60 13 Claims



1. A method of producing carbon steel and low-alloy steel in a basic oxygen furnace comprising preparing a molten metal suitable for producing the steel in said basic oxygen furnace, carrying out the top-blowing of oxygen gas through a lance and bottom blowing and then tapping the resulting molten steel, characterized in that a blow of the bottom-blowing gas predominantly comprising carbon dioxide is introduced into the molten metal through at least one nozzle provided in the bottom or side wall of said basic oxygen furnace at least partly during the period of time from the beginning of blowing to the tapping of the melt, the flow rate of the bottom blowing gas being 1/200–9/100 the rate of oxygen impinged upon the melt through said lance.

4,280,839

RECOVERY OF METAL VALUES FROM A METAL BEARING SOURCE OF NICKEL AND VANADIUM

William K. Tolley, Alrington Heights, and William C. Laughlin, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 1, 1979, Ser. No. 96,130

Int. Cl.[3] B22F 9/00; C22B 23/02

U.S. Cl. 75—82 8 Claims

1. A process for the recovery of both nickel and vanadium values from a source containing said metal wherein at least one of said nickel or vanadium is present in the form of a sulfide, which process comprises concomitantly treating said source at a temperature in the range of from about 600° C. to about 1500° C. with both (1) an oxidant selected from the group consisting of carbon dioxide and water and (2) a sulfur-containing compound to convert said vanadium to an oxide form and said nickel to a nickel-nickel subsulfide form, wherein said nickel-nickel subsulfide is physically larger than said vanadium oxide and wherein said vanadium oxide is separated from said nickel-nickel subsulfide by means of said difference in size of said nickel-nickel subsulfide and said vanadium oxide.

4,280,840

METHOD OF PROCESSING SPONGE IRON

Z. Alexander Swiecicki, Pittsburgh, Pa., assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 8, 1979, Ser. No. 92,610

Int. Cl.[3] C21B 13/00

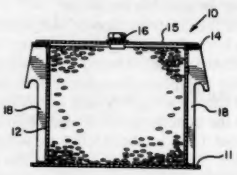
U.S. Cl. 75—43 13 Claims

1. A method of processing sponge iron from a direct reduction plant comprising the steps of;

filling a container with sponge iron,

sealing said container and applying a minus atmosphere pressure source thereon to vacuum seal the same,

introducing into said container a means to suppress any chemical reactions within said container,



transporting said container to a smelting furnace and charging said furnace with said container and the contents therein.

4,280,841

METHOD FOR MANUFACTURING A MECHANICAL SEAL RING

Hiroshi Ito, Dazaifu, and Shigeya Sakaguchi, Fukuoka, both of Japan, assignors to Nippon Tungsten Co., Ltd., Fukuoka, Japan

Filed Sep. 6, 1978, Ser. No. 939,947

Claims priority, application Japan, Sep. 27, 1977, 52-116291; Sep. 27, 1977, 52-116493

Int. Cl.[3] B22F 5/00, 3/00

U.S. Cl. 75—203 7 Claims

1. A method of bonding a hard carbide powder material to an iron base alloy substrate to form a mechanical seal ring comprising:

(a) disposing a hard carbide powder material in a groove formed in an iron base alloy substrate,

(b) compacting and presintering said hard carbide powder material while the latter is in said groove to form a presintered powder compact in said groove,

(c) applying a separate bonding material in the form of a nickel-phosphorous alloy to said presintered powder compact,

(d) heating said alloy-applied presintered powder compact in a non-oxidizing atmosphere to impart infiltration and diffusion of nickel and phosphorous from said bonding material into said iron base alloy substrate, and

(e) metallurgically bonding said powder compact to said iron base alloy substrate by said infiltration and diffusion.

4,280,842

DENTAL-CEMENT COMPOSITION AND METHOD OF PREPARING AND USING SAME

Floyd E. Dewhirst, Cambridge, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Mar. 19, 1979, Ser. No. 21,337

Int. Cl.[3] A61K 6/00; C08K 3/22, 5/07

U.S. Cl. 106—35 19 Claims

1. A premixed dental-cement composition adapted for use in the oral cavity of a patient, which dental-cement composition comprises in combination:

(a) a metal oxide-hydroxybenzophenone chelate compound;

(b) a dental filler material which comprises a metal oxide in an amount sufficient to provide additional strength to the composition, so that it may be employed as a dental cement;

said dental-cement composition having a eutectic tempera-

ture of from about 100° F. to about 125° F. and characterized by being reversibly changed between a hard solid state, suitable for use as a dental cement, to a liquid state, suitable for application as a dental cement within the eutectic temperature range.

4,280,843

FRIT GLASS COMPOSITION

William A. Graff, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 12, 1980, Ser. No. 148,917
Int. Cl.³ C03C *5/00*
U.S. Cl. 106—48 **6 Claims**

1. A frit glass composition devoid of both lead and arsenic lead consisting essentially of about, in weight percent,

SiO_2	18–25
TiO_2	0–5
ZrO_2	7–12
ZnO	18–21
BaO	4–6
CaO	4–6
Na_2O	2–4
K_2O	6–8
B_2O_3	15–22
Al_2O_3	3–7
F	0–3

except for incidental impurities and residual fluxes and refining agents.

4,280,844

REFRACTORY BRICK FOR MOLDING MOLTEN STEEL

Hiroshi Shikano, 9-40 Kobai 4-chome, Yahata Nishi-ku, Kita Kyushu-shi, Fukuoka-ken, and Toshihiko Iwata, 14-30 Shinozaki 5-chome, Kokura Kita-ku, Kita Kyushu-shi, Fukuoka-ken, both of Japan

Filed Oct. 29, 1979, Ser. No. 89,032
Claims priority, application Japan, Nov. 7, 1978, 53-136279
Int. Cl.³ C04B *35/52*
U.S. Cl. 106—56 **2 Claims**

1. A spalling- and corrosion-resistant refractory for steel making furnaces and casting pits comprising the composition of refractory material consisting essentially of one or more refractory inorganic substances, 1–30% by weight of aluminum powder having a particle size below 0.5 mm, and 2–15% by weight of thermo-setting organic resin binder based on the total weight of said refractory material, respectively, and prepared by mixing, kneading, molding into bricks and burning said composition at a temperature below 800° C.

4,280,845

CORDIERITE CERAMIC

Tadaaki Matsuhisa, and Shigeo Soejima, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 936,197, Aug. 24, 1978, abandoned, which is a continuation of Ser. No. 777,575, Mar. 15, 1977, abandoned. This application Dec. 27, 1979, Ser. No. 107,701
Claims priority, application Japan, Dec. 28, 1976, 51-159157
Int. Cl.³ C04B *35/18, 35/20*
U.S. Cl. 106—62 **5 Claims**

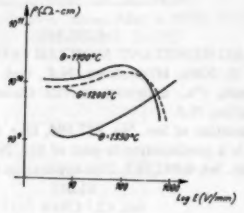
1. A process for the preparation of cordierite ceramic consisting mainly of cordierite in crystal phase after fired, and having a mean pore size of 2–50 microns and a thermal expansion coefficient of not more than 16×10^{-7} (1/°C.) in the range of 25°–1000° C., characterized in that a starting material having a chemical composition consisting of 42–52% by weight of silica, 34–48% by weight of alumina and 10–18% by weight of magnesia, in which an average particle size of magnesia starting material is 5–150 microns, is fired by raising temperature at a rate of 30°–300° C./hr in the temperatures above 1100° to control formation of a liquid phase appearing during firing and then keeping a peak temperature for sufficient time to attain crystallization of cordierite from the liquid phase.

4,280,846

METHOD OF FABRICATION OF DIELECTRIC MATERIAL HAVING VOLUME-DISTRIBUTED INSULATING BARRIERS FOR USE AT HIGH VOLTAGES AND A CERAMIC BODY FABRICATED BY SAID METHOD

Eliane Charles; Mieczyslaw Hildebrandt, and Francois Buchy, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 27, 1979, Ser. No. 61,407
Claims priority, application France, Aug. 1, 1978, 78 22734
Int. Cl.³ C04B *35/50, 35/49*
U.S. Cl. 106—73.2 **8 Claims**



7. A ceramic body prepared by a process comprising:

(a) grinding raw materials constituted of a powdered mixture of oxides and salts in the following proportions:

1-x moles of $BaCO_3$;

x moles of $CaCO_3$, $SrCO_3$, $PbCO_3$ or $MgCO_3$ or another salt of Ca, Sr, Pb, or Mg which can readily be decomposed under the action of heat;

z(1-y) moles of TiO_2;

z y moles of SnO_2, ZrO_2 or SiO_2; wherein

$0<x<0.5$

$0<y<0.5$

$1<z<1.1$,

the initial mixture further comprising at least one oxide or salt of a rare earth element or an element having a valence of 3 or 5 in a quantity by weight representing 15 to 30 per ten thousand of the total weight of moles of BaO and of TiO_2 contained in the initial mixture and at least one oxide or salt of copper, manganese, cobalt or iron in a quantity by weight representing 5 to 15 per ten thousand of the total weight of moles of BaO and of TiO_2 contained in the mixture;

(b) heat treatment by calcining;

(c) further grinding said calcined material;

(d) shaping said material by pressing or casting; and

(e) heat treatment by sintering following a temperature curve comprising a rising portion, a level-temperature stage and a falling portion, the rising portion and the level-temperature stage occurring in atmospheric air, the temperature of the level stage being within the range of 1330° C. to 1380° C., the operation being conducted in a substantially oxygen containing atmosphere during the falling-temperature stage which occurs at a rate less than 50° C. per hour, starting from a temperature which is less than the level-stage value by 0° C. to 300° C.; said ceramic body having the characteristic that the curve of variation in resistivity of said ceramic body as a function of the electric field to which said body is subjected has at least one rising portion.

4,280,847

PROCESS AND APPARATUS FOR PRODUCING HIGHLY COLLOIDIZED WATER-CEMENT MIXTURES AND FOR COATING PIPES

Wilfried Hacheney, am Königsberg 15, 4930 Detmold, Fed. Rep. of Germany

Filed Apr. 21, 1978, Ser. No. 898,894

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718236; Oct. 13, 1977, 2746053; Dec. 7, 1977, 2754424

Int. Cl.[3] C04B *7/02*

U.S. Cl. 106—89 8 Claims

1. A process for forming protective coatings for structural components, comprising premixing water and cement in a mixer in a weight ratio between about 0.25 and 0.6 for about 2 minutes at a speed of 300 m/min; rotating said water-cement mixture in the same or in a second mixer so that cement grains in said mixture are exposed to a mass acceleration of at least 2 g ($g=9.81\ m/sec^2$) over at least 8 minutes, thereby forming a completely colloidized cement glue; applying said cement glue to a structural component to be coated; and allowing said coating to set for about 8 to 12 hours.

4,280,848

SAG RESISTANT MORTAR COMPOSITIONS

Jeffrey R. Ellis, Hightstown, N.J., and Herman B. Wagner, Perkasie, Pa., assignors to Tile Council of America Inc., Princeton, N.J.

Continuation of Ser. No. 857,804, Dec. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 749,946, Dec. 20, 1976, Pat. No. 4,082,563. This application Oct. 4, 1979, Ser. No. 81,811

Int. Cl.[3] C04B *7/35*

U.S. Cl. 106—90 25 Claims

1. A composition capable of admixture with water to form a sag resistant hydraulic cementitious composition, the composition before said admixture comprising:

(a) at least 20% by weight, based on the weight of the composition, of an hydraulic cement with from about 0.5 to about 50% by weight of at least one substantially water insoluble polymer;

(b) at least 0.2% by weight, based on the weight of the composition, of at least one water soluble high molecular weight polymer; and

(c) from about 0.2 to about 5.0% by weight based on the weight of the composition, of at least one sag resistance imparting agent selected from among gelatinous metal hydroxides and metal salts capable of forming a gelatinous or hydrated hydroxide in the presence of aqueous base.

4,280,849

AQUEOUS DISPERSIONS

Peter B. Howard, Yarm, and Peter J. Broadhurst, Northallerton, both of England, assignors to Tioxide Group Limited, Cleveland, England

Filed Feb. 12, 1980, Ser. No. 120,780

Claims priority, application United Kingdom, Mar. 6, 1979, 07903/79

Int. Cl.[3] C09C *1/36*

U.S. Cl. 106—300 19 Claims

1. A process for the manufacture of an aqueous paste of solid particulate material having a desired viscosity which comprises subjecting an aqueous dispersion of said particulate material to a two-stage filtration operation in which a filter cake obtained from a first filtration stage is mixed without the addition of any substantial quantity of water with a dispersing agent for the solid particulate material in an amount which is sufficient to render the cake free-flowing and the free-flowing dispersion so obtained is then subjected to the second-stage filtration employing a pressure filter to produce a filter cake which is then homogenised in a mixer until a recovered aqueous paste having the desired viscosity is obtained.

4,280,850

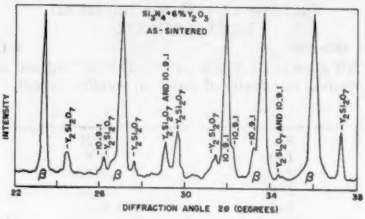
S13N4 HAVING HIGH TEMPERATURE STRENGTH AND METHOD

J. Thomas Smith, Acton; Carr L. W. Quackenbush, Lexington, and F. Joseph Reid, Acton, all of Mass., assignors to GTE Laboratories, Incorporated, Waltham, Mass.

Filed Jun. 15, 1978, Ser. No. 916,334

Int. Cl.[3] C04B *35/50, 35/58*

U.S. Cl. 106—73.2 5 Claims



1. A polycrystalline ceramic body consisting essentially of a first phase of Si_3N_4 grains, and a second substantially completely crystalline intergranular phase consisting essentially of SiO_2 and a densifying additive RE_2O_3 where RE is selected from the group consisting of Y and the lanthanide rare earths La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu.

4,280,851

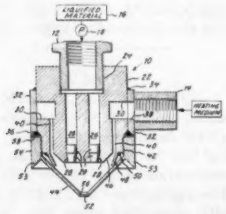
PROCESS FOR COOKING OR GELATINIZING MATERIALS

Esra Pitchon, Flushing, N.Y.; Joseph D. O'Rourke, Dover, and Theodore H. Joseph, Ellendale, both of Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,779

Int. Cl.[3] C13L *1/04, 1/08*

U.S. Cl. 127—33 34 Claims



1. A method of uniformly cooking a material comprising:

(a) mixing a material in an aqueous solvent;

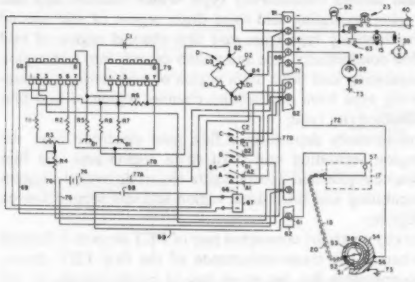
(b) atomizing the mixture into an enclosed chamber;

(c) interjecting a heating medium into the atomized mixture in the enclosed chamber to cook the material, said chamber containing a vent aperture positioned to enable the atomized mixture to exit the chamber, the size and shape of the chamber and the vent aperture being effective to maintain the temperature and moisture content of the material for a period of time sufficient to cook said material.

4,280,852
METAL TUBE CLEANING METHOD

Heyward O. Dunham, 12 Eastview Dr., Mooresville, Ind. 46158, and Harry K. Dunham, 11241 Keith Dr., Whittier, Calif. 90606

Division of Ser. No. 61,608, Jul. 30, 1979, Pat. No. 4,224,072.
This application Apr. 17, 1980, Ser. No. 141,112
Int. Cl.[3] B08B *1/04, 7/04, 9/02*
U.S. Cl. 134—8 4 Claims



1. A method of sensing the cleaning progress of a cleaning tool in a heat exchanger tube comprising the steps of:

applying a voltage between the tube and a sensor element of a tube cleaning tool being rotated in the tube;

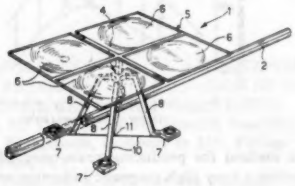
utilizing any current variation signal in a path between said sensor element and tube to produce an input signal representative of resistance to current flow as the tool is rotated for cleaning the tube;

producing an indicator output signal in response to the input signal, indicative of the current flowing between the sensor element and tube during a period of time, and thus indicating the cleanliness of the tube based upon the amount of high-resistance foreign deposits in the tube.

4,280,853
SOLAR ENERGY CONVERSION UNIT

Mario Palazzetti; Cesare Ponti, both of Avigliana, and Pier L. Tenci, Nichelino, all of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Mar. 24, 1980, Ser. No. 133,074
Claims priority, application Italy, Mar. 30, 1979, 67669 A/79; Feb. 7, 1980, 67183 A/80
Int. Cl.[3] H01L *31/04*
U.S. Cl. 136—246 6 Claims



1. A solar-energy conversion unit comprising

a fixed support structure;

a mounting element articulated on said support structure with at least two degrees of freedom relative thereto;

an optical solar-energy concentrator fixed to the said mounting element and comprising a plurality of coplanar spherical lenses mounted with their centers mutually disposed in a geometric pattern corresponding to that formed by the vertices of a polygon, the geometric center of said pattern lying on the notional line perpendicular to the plane of the said lenses which passes through the center of articulation of the said mounting element on the support structure;

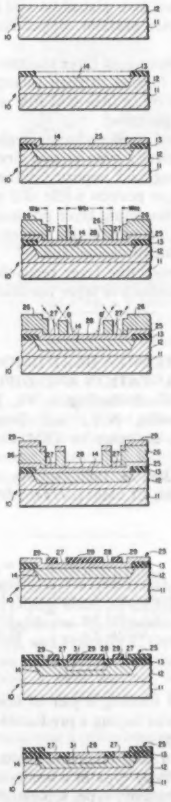
a plurality of solar-energy converter modules each comprising a photo-voltaic cell; and

a plurality of connecting legs extending from said mounting element and supporting respective ones of said converter modules in a common plane parallel to said lenses with each converter module being located at the foci of respective ones of the spherical lenses and with the point of articulation of the mounting element to the support structure being located between said plane and said lenses.

4,280,854
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING CONDUCTIVE AND INSULATING PORTIONS FORMED OF A COMMON MATERIAL UTILIZING SELECTIVE OXIDATION AND ANGLED ION-IMPLANTATION

Hiroshi Shibata; Hideo Iwasaki, and Kunio Yamada, all of Kawasaki, Japan, assignors to VLSI Technology Research Association, Kawasaki, Japan

Filed May 1, 1979, Ser. No. 34,901
Claims priority, application Japan, May 4, 1978, 53/52654
Int. Cl.[3] H01L *21/265, 21/285*
U.S. Cl. 148—1.5 2 Claims



1. A method of manufacturing a semiconductor device comprising a semiconductor substrate having a principal surface and a predetermined conductivity type, said method comprising the steps of:

selectively forming, in said substrate, a first semiconductor region reaching said principal surface, said first semiconductor region being of the conductivity type opposite to said predetermined conductivity type to define a first PN junction in said substrate;

forming a layer of a conductive material on said principal surface to cover said first semiconductor region, said material being oxidizable into an insulating material when heated;

selectively forming a photoresist layer on said conductive layer to a predetermined thickness with a first and a second portion of said conductive layer exposed over said first semiconductor region, said first and said second conductive layer portions having a first width and a second width wider than said first width, respectively, said second conductive layer portion being placed inside said first conductive layer portion with the photoresist layer left therebetween;

carrying out ion implantation to introduce an impurity of the predetermined conductivity type substantially only on said second conductive layer portion at a first and a second angle to said principal surface, said first and said second angles being selected in consideration of said predetermined thickness and said first and said second widths;

forming a layer of a protective material on said photoresist layer and said first and said second conductive layer portions, said protective material preventing those portions of said conductive layer placed on said first and said second conductive layer portions, respectively, from being oxidized;

removing said photoresist layer together with the protective layer portion formed thereon to expose the conductive layer portions other than said first and said second conductive layer portions;

forming a second semiconductor region of the predetermined conductivity type in said first semiconductor region by making said impurity diffuse from said second conductive layer portion while said exposed portions are oxidized into insulating layer portions, said second semiconductor region providing a second PN junction in said first semiconductor region; and

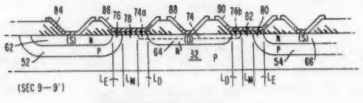
removing the protective layer remaining on said first and said second conductive layer portions.

4,280,855

METHOD OF MAKING A DUAL DMOS DEVICE BY ION IMPLANTATION AND DIFFUSION

Claude L. Bertin, South Burlington, Vt.; Francisco H. De La Moneda, Stormville, N.Y., and Donald A. Soderman, Saratoga, Calif., assignors to IBM Corporation, Armonk, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,484
Int. Cl.[3] H01L *7/44, 21/26*
U.S. Cl. 148—1.5 **7 Claims**



1. A method for forming a pair of mutually compensated diffused MOS devices having a predictable transconductance, comprising the steps of:

simultaneously forming a first and second channel regions of a first conductivity type in a semiconductor substrate of said first conductivity type, separated by a first distance;

simultaneously forming a first and second source regions of a second conductivity type within said first and second channel regions of said first conductivity type;

forming a third drain region of said second conductivity type between said first and second channel regions of said first conductivity type, having a first separation distance from said first channel region of said first conductivity type and a second separation distance from said second channel region of said first conductivity type, for a common drain of two FET devices having said first and second regions of said second conductivity type as the respective sources of said two FET devices;

ion implanting a conductivity layer of said second conductivity type in said substrate over said third drain region of said second conductivity type, which extends into said region separating said third drain region of said second conductivity type from said first channel region of said first conductivity type and which extends into said region separating said third drain region of said second conductivity type from said second channel region of said first conductivity type;

simultaneously depositing a first gate electrode over the region separating said third drain region and said first source region and a second gate electrode over the region separating said third drain region and said second source region;

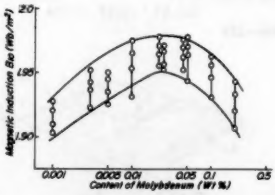
whereby a parallel connected pair of FET devices is formed wherein the transconductance of the first FET device compensates for the error due to misalignment, in the transconductance of the second FET device.

4,280,856

METHOD FOR PRODUCING GRAIN-ORIENTED SILICON STEEL SHEETS HAVING A VERY HIGH MAGNETIC INDUCTION AND A LOW IRON LOSS

Yukio Inokuti; Yoh Shimizu, both of Chiba, and Hiroshi Shimanaka, Funabashi, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jan. 4, 1980, Ser. No. 109,524
Int. Cl.[3] H01F *1/04*
U.S. Cl. 148—111 **2 Claims**

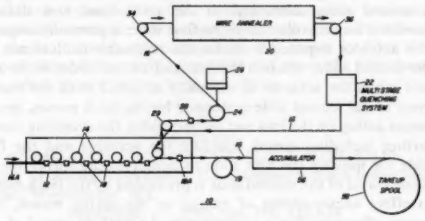


1. In a method for producing grain-oriented silicon steel sheets having a very high magnetic induction and a low iron loss, in which a silicon steel material containing not more than 0.06% of C, 2.0–4.0% of Si, 0.005–0.20% of Sb and not more than 0.10% of at least one of Se and S is hot rolled and the hot rolled sheet is repeatedly subjected to annealing and cold rolling to obtain a cold rolled steel sheet having a final gauge, then subjected to primary recrystallizing annealing concurrently to effect decarburization, and to final annealing at a temperature of 820°–900° C. for 10–80 hours, and to grow secondary recrystallized grains of [110] <100> orientation, the improvement comprises adding Mo of 0.01 to 0.10% to the above-described silicon steel material as an inhibitor.

4,280,857
CONTINUOUS DRAW ANNEAL SYSTEM

H. Clifford Dameron, Jr., Ross Township, Allegheny County; Nicholaas L. Brouwer, Washington Township, Fayette County, and Guy E. Martin, Ross Township, Allegheny County, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 5, 1979, Ser. No. 91,136
Int. Cl.[3] B21C 9/00; C21D 8/06, 9/62
U.S. Cl. 148—156 3 Claims



1. Apparatus for successively slip drawing, annealing and quenching non-ferrous wire comprising:

a machine for continuously drawing wire by directing the same through a plurality of successive wire drawing dies using a plurality of capstans upon which turns of the wire are wound, the capstans slipping within the turns of wires in the process of directing wire to the dies,

means for continuously annealing wire,

means for directing the wire from the machine to the annealing means before the wire reaches the last die of the plurality, including means independent of the slip of the drawing machine to control tension on the wire entering the annealing means,

means for continuously quenching the wire after it leaves the annealing means,

means for controlling the rate of cooling in the quenching means and thus the temperature of the wire leaving the quenching means, such that the wire leaving the quenching means has a predetermined temperature value,

means for continuously returning the wire from the quenching means to the drawing machine for final drawing of the wire in the machine, and

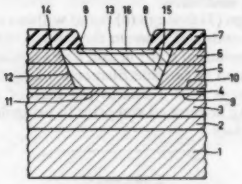
a last die for finally drawing the wire in the machine and within the slip profile of the machine.

4,280,858
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY RETARDING THE DIFFUSION OF ZINC OR CADMIUM INTO A DEVICE REGION

Christianus J. M. Van Opdorp, and Hendrik Veenvliet, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,428
Claims priority, application Netherlands, Nov. 29, 1978, 7811683
Int. Cl.[3] H01L 21/20, 21/22
U.S. Cl. 148—175 10 Claims

1. A method of manufacturing a semiconductor device including a body of III-V compound type semiconductor material comprising the steps of forming an n-type substrate and a substrate-adjoining region having conductivity properties differing from said substrate, introducing zinc or cadmium into said region over at least a part of a surface of said region away from said substrate, diffusing said zinc or cadmium to said substrate, and retarding diffusion of said zinc or cadmium into said substrate near a junction between said substrate and said

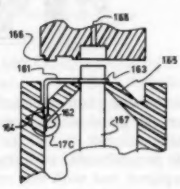


region by selecting the net donor concentration in said substrate near said junction to be high.

4,280,859
METHOD OF MANUFACTURING A BLOW-MOLDED CONTAINER WITH AN INTEGRAL HANDLE

Mortimer S. Thompson, P.O. Box 113, Enfield, Conn. 06082

Continuation of Ser. No. 877,603, Feb. 14, 1978, abandoned. This application Apr. 10, 1979, Ser. No. 28,886
Int. Cl.[3] B32B 1/10; B29C 17/07
U.S. Cl. 156—73.5 34 Claims



1. Method for forming a plastic container from an expanded preform, comprising:

forming a preform with an integral handle having a ring and projection, wherein said ring is formed intermediate the ends of the preform and is integral with and extends substantially about a region of the preform that remains substantially constant in size during expansion, and wherein said projection is formed to extend from the ring for gripping, lifting and pouring and for distributing the stresses resulting therefrom about said ring,

placing the preform in means for expansion and holding said ring by such means to properly locate and restrict the movement of the preform therewithin, and

expanding the preform below said ring to form the plastic container.

4,280,860
PROCESS FOR MANUFACTURING NONWOVEN FABRICS COMPOSED OF CRIMPED FILAMENTS

Hsiang-Sheng Shen; LeMoyne W. Plischke; William M. Baggett, all of Pensacola, and Franklin T. Osborne, Gulf Breeze, all of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 2, 1979, Ser. No. 90,825
Int. Cl.[3] D04H 5/14; D01D 5/22; D02G 1/18
U.S. Cl. 156—167 6 Claims

1. A process for preparing a point-bonded, nonwoven fabric having apparel-like qualities comprising:

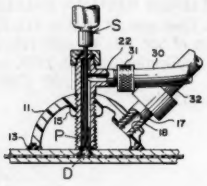
(1) melt spinning side-by-side bicomponent filaments in which both components are composed of the same polymer and one component contains at least 500 ppm of CaF_2 uniformly dispersed therein, with no CaF_2 in the other component,

(2) quenching said filaments,

(3) pneumatically attenuating said quenched filaments,

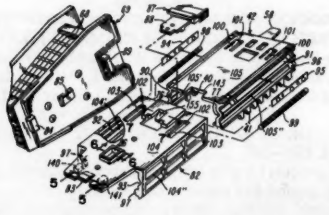
(4) depositing said attenuated filaments onto a moving surface to form a web,
(5) point-bonding said filaments to provide a nonwoven fabric, and
(6) collecting said fabric
wherein said steps (1) through (4) occur within a period of time less than 0.5 seconds and wherein the ratio of the two components and the amount of CaF_2 in said CaF_2-containing component are correlated to provide filaments which without being heated develope at least 5 crimps per inch of non-extended length after being attenuated and prior to being deposited onto said moving surface.

4,280,861
APPARATUS FOR REPAIRING LAMINATED SAFETY GLASS
Herbert S. Schwartz, 915 SW. 101st Ave., Miami, Fla. 33174
Filed Aug. 25, 1980, Ser. No. 180,691
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—382 **7 Claims**



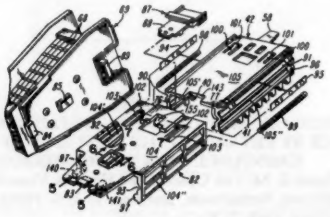
1. Apparatus for repairing laminated safety glass comprising, in combination, an elongated tubular member, means for supporting said tubular member so that its central, longitudinal axis is substantially perpendicular with respect to the surface of the glass to be repaired and with one end thereof in sealing relation with respect to and surrounding the damaged zone to be repaired, a resilient closure at the other end of said tubular member to provide for piercing thereof with the needle of a hypodermic syringe and thereby enable the injection of repair fluid upon the damaged glass zone to be repaired, and means communicating with the interior of said tubular member for alternately imposing reduced and increased air pressure therein to facilitate the withdrawal of air from the damaged zone and substitution therefor of the repair fluid.

4,280,862
LABEL PRINTING AND APPLYING APPARATUS
Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Aug. 22, 1979, Ser. No. 68,843
Int. Cl.³ B32B *31/00*; B41F *1/02, 1/08*
U.S. Cl. 156—384 **16 Claims**



6. Apparatus for printing and applying pressure sensitive labels releasably adhered to a web of supporting material, the apparatus comprising: a housing having a handle, a platen and a cooperable print head mounted by the housing, the housing having means for rotatably supporting a roll of pressure sensitive labels, means for delaminating printed labels from the web, means for applying printed labels, means defining a path for the web from the label roll, to between the platen and the print head, around the delaminating means, into engagement with the feeding means and out of the housing, and means for moving the print head into and out of printing cooperation with the platen and for thereafter moving the feeding means to advance the web to dispense a label into label applying relationship with the label applying means and to bring another label to a printing position between the print head and the platen, the moving means including a first slide slidably mounted by the housing, a second slide connected to the print head and slidably mounted on and relative to the first slide, a manually engageable actuator disposed at the handle, releasable latch means for the second slide, wherein the first and second slides move as a unit when the actuator is manually actuated until the movement of the second slide is stopped by the latch means, spring means acting on the first and second slides, the actuating means further including means coupling the actuator and the first slide for moving the first slide to compress the spring means while travel of the second slide is prevented by the latch means to effect accumulation of energy in the spring means, and means effective after a predetermined length of travel of the first slide for releasing the latch means to enable the spring means to drive the second slide and move the print head into printing cooperation with the platen, the spring means including a spring assembly having a plurality of coupled telescoping members, one member having a head and another member having a socket for receiving the head, the socket having a plurality of fingers for gripping the head, and a helical spring for exerting opposite forces on the members and for maintaining the members in coupled relationship, wherein the one member includes a first section having a relatively large transverse dimension and a second section having a relatively small transverse dimension joined to the first section, the second section terminating at the head, the fingers of the other member being received about the second section and being engaged with the head.

4,280,863
LABEL PRINTING AND APPLYING APPARATUS
Paul H. Hamisch, Jr, Franklin; Donald L. Karn, Springboro, and James A. Makley, Miamisburg, all of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Aug. 22, 1979, Ser. No. 68,844
Int. Cl.³ B41K *1/00*
U.S. Cl. 156—387 **39 Claims**



1. Apparatus for printing and applying pressure sensitive labels releasably adhered to a web of supporting material, the apparatus comprising: a housing having a handle, a platen and a cooperable print head mounted by the housing, the housing having means for rotatably supporting a roll of pressure sensitive labels, means for delaminating printed labels from the web, means for applying printed labels, means defining a path for the web from the label roll, to between the platen and the print head, around the delaminating means, into engagement with the feeding means and out of the housing, and means for moving the print head into and out of printing cooperation with the

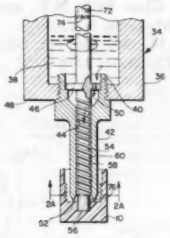
platen and for thereafter moving the feeding means to advance the web to dispense a label into label applying relationship with the label applying means and to bring another label to a printing position between the print head and the platen, the moving means including a first slide slidably mounted by the housing, a second slide connected to the print head and slidably mounted on and relative to the first slide, a manually engageable actuator disposed at the handle, and spring means acting on the first and second slides, releasable latch means for the second slide, the moving means further including means coupling the actuator and the first slide for moving the first slide relative to the second slide to compress the spring means to accumulate energy in the spring means, and means for releasing the latch means to enable the spring means to drive the second slide relative to the first slide and move the print head into printing cooperation with the platen.

4,280,864

APPARATUS AND METHOD FOR LINING CAPS

Henry Bromberg, Providence, R.I., assignor to Tech Industries, Inc., Woonsocket, R.I.

Filed Mar. 17, 1980, Ser. No. 131,434
Int. Cl.³ B29B *3/02;* B29C *19/00*
U.S. Cl. 156—500 **11 Claims**



1. A device for applying a viscous liquid material such as a hot melt adhesive in a preselected pattern such as an annular ring upon a receiving surface including a central area comprising, an elongated member having an open longitudinal bore and including upper and lower ends thereof, a longitudinally directed shaft extending through said bore and adapted for limited relative rotational contact therewith, said shaft including an extension at the lower end thereof, said extension having a lower surface adapted to contact said central area of said receiving surface, said member lower end terminating in an edge outwardly radially offset from said extension and forming a space therebetween, said shaft and said member bore cooperating to define at least one generally closed continuous helical grooved path operatively associated with a supply of said material at its upper end and terminating in at least one open arcuately shaped slot at its lower end, said slot positioned at the top of said space and extending substantially less than the full perimetal extent of such space at the top thereof, and means for effecting said relative rotation so as to force said material along said grooved path and out of said slot in a heaped pile along at least an arcuate portion of said ring pattern.

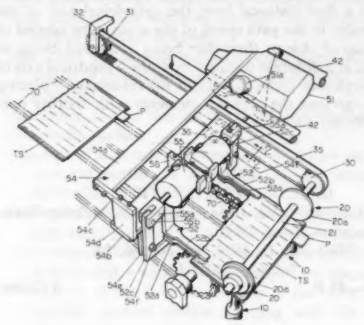
4,280,865

SYNCHRONIZED DRIVE FOR HEAT SEALING ROLLER ANVILS

Robert D. Simonton, Fremont, Ohio, assignor to Dale Products, Inc., Fremont, Ohio

Filed Aug. 27, 1979, Ser. No. 69,620
Int. Cl.³ B30B *15/30;* B32B *31/20*
U.S. Cl. 156—538 **5 Claims**

1. In a mechanism for heat sealing overlapping portions of thermoplastic sheet material having a thermal energy source producing a heating zone and linearly movable gripping means for positively linearly moving the thermoplastic sheet material through the heating zone, the improvement comprising a roller anvil, means mounting said roller anvil for rotation at a position in said heating zone to engage the surface of the thermoplastic sheet material opposite to the thermal energy source,



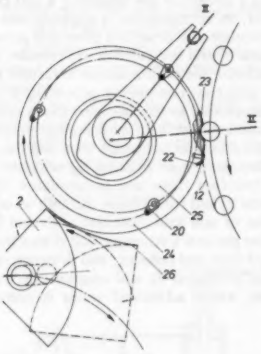
and means movable with said gripping means for positively rotating said roller and to move the peripheral surface thereof in exact speed synchronism with the linear movement of said thermoplastic sheet material through the heating zone.

4,280,866

LABELING STATION

Rudolf Zodrow, Dusseldorf, and Egon Höveler, Haan, both of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,990
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845645
Int. Cl.³ B65C *9/16, 9/36*
U.S. Cl. 156—568 **3 Claims**



1. In a labeling station for applying labels onto objects, having at least one pickup element mounted eccentrically on a rotatable carrier for movement about an axis, a gripper cylinder comprising a shaft and a rotating carrier having eccentrically disposed gripping and pressing elements on portions thereof, which elements are tangent to the circulation path of the pickup elements approximately in synchronism, the labels being transferred by the gripping and pressing elements to objects moved along a transport path, the portion of the gripper cylinder which carries the pressing elements being eccentrically mounted on the gripper-cylinder shaft in such a way that the areas to be labeled of the objects are tangent to or slightly intersected by the path of rotation of the pressing elements, and the portion carrying the pressing elements and

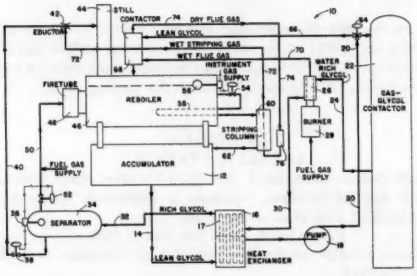
the portion carrying the gripping elements rotate with the same angular velocity, the improvement comprising means for adjusting the rotative speed of the pressing elements from the path speed of the areas to be labeled of a first group of objects being conveyed along an arcuate path whose areas to be labeled are at a first distance from the cylindrical axis of the gripper cylinder to the path speed of the areas to be labeled of another group of objects thereafter being conveyed along an arcuate path, at a different distance from the cylindrical axis of the gripper-cylinder including means for releasably replacing the portion carrying the pressing elements with another portion of a different diameter.

4,280,867

GLYCOL REGENERATION

Robert A. Hodgson, Tulsa, Okla., assignor to Maloney-Crawford Corporation, Tulsa, Okla.

Filed Jun. 11, 1979, Ser. No. 46,784
Int. Cl.³ B01D *1/14*
U.S. Cl. 159—47 R **5 Claims**



1. In a method for reconcentrating a liquid desiccant used in dehydrating a stream of gas including a still column and firetube reboiler, an accumulator, a gas-desiccant contactor, and means to circulate said desiccant from said accumulator to said contactor and to said still column and reboiler and to return to said accumulator; the improvement in further reconcentrating said liquid desiccant comprising providing a catalytic burner system; continuously producing inert gas in said burner system for use in the method; heat exchanging water-rich desiccant from said gas-desiccant contactor with said flue gas to produce hot, rich desiccant; heat exchanging said hot, rich desiccant with lean desiccant from said accumulator; introducing said rich desiccant to said still column through an eductor; contacting a portion of said lean desiccant with said flue gas to produce dry flue gas and a resulting rich desiccant stream, which is introduced into said reboiler; and drawing said dry flue gas by a vacuum produced by said eductor into a desiccant stripping column where additional water is removed from said desiccant.

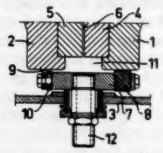
4,280,868

METHOD FOR REFINING LIGNOCELLULOSE-CONTAINING MATERIAL

Hans E. Höglund, Matfors, and Per V. Peterson, Sundsvall, both of Sweden, assignors to Sunds Defibrator Aktiebolag, Sweden

Filed Aug. 23, 1979, Ser. No. 69,082
Claims priority, application Sweden, Aug. 29, 1978, 7809085
Int. Cl.³ D21D *1/30*
U.S. Cl. 162—28 **11 Claims**

1. A method of refining lignocellulose-containing material in a disc refiner having a pair of refining discs, which define a gap therebetween, and a housing surrounding the discs, comprising the steps of feeding the material into the gap between the pair of discs; refining the material as it passes through the gap generally radially outwardly with respect to the pair of discs until it exits at an outlet of the gap at the periphery of the pair of discs; continuously flowing a liquid past the outlet of the gap so as to dilute the refined material to a fiber suspension of an easily pumpable concentration; and maintaining a predetermined amount of the fiber suspension adjacent to the outlet of



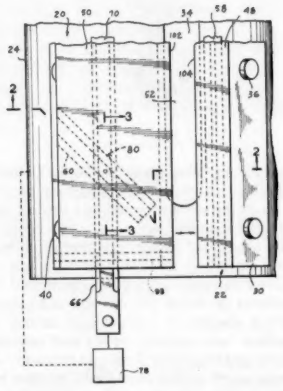
the gap, whereby the pressure at said outlet of said gap may be controlled independently of the pressure in said housing and the retention time of the material in the gap between the pair of discs may be increased.

4,280,869

SUCTION DEWATERING SYSTEM WITH CAM ACTUATED ADJUSTABLE SLOT

Lawrence W. Eckerdt, Glens Falls, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Feb. 14, 1980, Ser. No. 121,389
Int. Cl.³ D21C *1/48, 1/52*
U.S. Cl. 162—252 **12 Claims**



12. A suction dewatering system comprising; a suction device adapted to be connected to a source of suction and having a longitudinal opening therein through which suction is applied and the opening being positioned substantially perpendicular to the direction of material travelling across the suction device for dewatering thereof, a cover including at least two spaced lands with means thereon for mounting the lands to the suction device and the space therebetween forming a slot in alignment with the longitudinal opening in the suction device, a wear strip removably mounted on each land and having a wear surface for a material to be passed thereover for dewatering, at least one of the wear strips automatically being adjustable by adjustment means so that shifting of the adjustment means will cause the adjustable strip to shift laterally and vary the slot width in the direction of travel of the material across the wear surface and varying the dwell time of the material over the slot to which suction is being applied, the adjustment means including a cam arm on the cover, one of the cam arm and cover having a longitudinal track and the other of the cam arm and cover longitudinally extending into the longitudinal

track longitudinally extending in a longitudinal track, at least one recess with a pair of opposing walls at an oblique angle forming an oblique track with respect to the longitudinal slot; and a cam extending into and mating with the oblique track, and automatic control means connectable to the cam arm and actuable to reciprocate the cam arm in response to changing conditions during use of the material causing the cam to slide in the oblique track and the adjustable wear strip to shift laterally with respect to the longitudinal slot and vary the longitudinal slot width to change the dwell time exposure of the material with respect to the longitudinal slot.

4,280,870

PULP FEED FOR A PAPERMAKING MACHINE

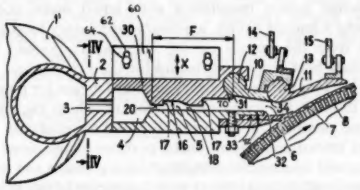
Alfred Bubik, Ravensburg; Rüdiger Kurtz, Immenstaad, both of Fed. Rep. of Germany, and Hermann Kutzelmann, Kriens, Switzerland, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Continuation of Ser. No. 38,625, May 14, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,602

Claims priority, application Switzerland, May 30, 1978, 5873/78

Int. Cl.³ D21F 1/06

U.S. Cl. 162—336 **9 Claims**



1. A pulp feed for feeding pulp from a headbox into a forming screen of a papermaking machine containing a guide device for a stock suspension, said guide device comprising:

an elongate, substantially slot-shaped guide channel means having a predetermined lengthwise direction of extent;

said guide channel means being bounded by side surfaces;

one of said side surfaces having two substantially step-shaped widened portions;

the other of said side surfaces being essentially flat at the region of the widened portions and between said widened portions;

the other of said side surfaces defining a substantially flat counter surface;

the one of said side surfaces having, before and after each widened portion, a respective surface section merging therewith;

each said surface section being essentially flat and extending essentially parallel to said flat counter surface;

said step-shaped widened portions defining a first widened portion and a second widened portion spaced from one another in the direction of flow of the stock suspension;

a tapered channel section merging with the flat surface section following the first step-shaped widened portion in the direction of flow of the stock suspension;

said tapered channel section having a boundary surface enclosing an angle which does not exceed 45° with respect to the flat counter surface;

a perforated plate, having substantially cylindrical bores, being connected forwardly of said slot-shaped guide channel means;

a mixing chamber being connected after said perforated plate and having an enlarged cross-sectional area in relation to a starting region of said guide channel means; and

the length of the flat section following the first step-shaped widened portion amounts to at least six times the height of said first step-shaped widened portion.

2. A pulp feed for feeding pulp from a headbox onto a forming screen of a papermaking machine containing a guide device for a stock suspension, said guide device comprising:

an elongate, substantially slot-shaped guide channel means having a lengthwise direction of extent;

said guide channel means being bounded by side surfaces;

one of said side surfaces having two substantially step-shaped widened portions;

the other of said side surfaces being essentially flat at the region of the widened portions and between said widened portions;

the other of said side surfaces defining a substantially flat counter surface;

the one of said side surfaces having, before and after each widened portion, a respective surface section merging therewith;

each said surface section being essentially flat and extending essentially parallel to said flat counter surface;

said step-shaped widened portions defining a first widened portion and a second widened portion spaced from one another in the direction of flow of the stock suspension;

a tapered channel section merging with the flat surface section following the first step-shaped widened portion in the direction of flow of the stock suspension;

said tapered channel section having a boundary surface enclosing an angle which does not exceed 45° with respect to the flat counter surface;

a perforated plate, having substantially cylindrical bores, being connected forwardly of said slot-shaped guide channel means;

a mixing chamber being connected after said perforated plate and having an enlarged cross-sectional area in relation to a starting region of said guide channel means; and

the flat surface section directly forwardly of the second step-shaped widened portion having a length amounting to at least twice the gap width of the guide channel means at such location.

4,280,871

LIVE STEAM SHUT-OFF DEVICE FOR PRESSURIZED WATER REACTORS

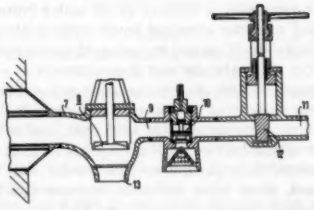
Jürgen Hoffmann, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Continuation of Ser. No. 427,148, Sep. 27, 1976, abandoned, which is a continuation of Ser. No. 539,422, Jan. 8, 1975, abandoned. This application Dec. 20, 1977, Ser. No. 862,626

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1974, 2403668

Int. Cl.³ G21C 9/00

U.S. Cl. 176—38 **4 Claims**



1. In a pressurized water reactor having a safety vessel formed of a steel casing and a concrete wall surrounding and spaced from the steel casing, a double-wall steam discharge line extending from the steel casing through a hole formed in the concrete wall, the double-wall steam line having outer and inner walls defining an annular passage open inside the steel casing from returning steam escaping through a possible rupture in the inner wall back to the inside of the steel casing, and

said line being closed outside the steel casing at a location spaced therefrom a distance at least equal to the distance between the steel casing and the concrete wall, a shut-off device disposed in said steam discharge line comprising exclusively one shut-off valve having a casing, said casing being directly connected to an end of said steam line outside said concrete wall, said casing being formed with steam inlet and outlet openings and with a further opening and means for closing said outlet opening, and at least one additional value having a casing formed with an inlet opening, said last-mentioned valve casing being directly connected by weldment to said first-mentioned valve casing so as to connect said inlet opening of said last-mentioned valve casing directly to said further openings.

4,280,872

CORE CATCHER DEVICE

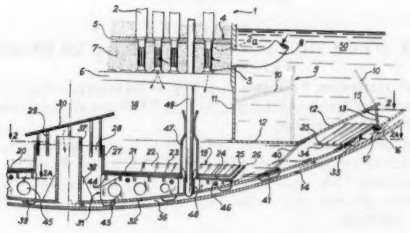
Luciano Ferrari, Modena, Italy; Bernard Fourest, Boulogne, France; Gaston Kayser, Aix en Provence, France, and Robert Martin, Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 23, 1978, Ser. No. 918,370

Claims priority, application France, Jun. 23, 1977, 77 19227

Int. Cl.³ G21C *9/00, 13/02*

U.S. Cl. 176—38 **9 Claims**



1. A core catcher device for a liquid metal cooled fast nuclear reactor comprising a pressure vessel with a bottom wall and containing a reactor core and liquid metal coolant and a core-supporting diagrid carried by a diagrid support structure on said bottom wall, wherein said device comprises a collection tray placed beneath the reactor core and pierced by a central chimney, the area of said tray being larger than the horizontal cross sectional area of said core, and a bearing structure for said collection tray having the form of a shell extending substantially parallel to said bottom wall of said pressure vessel, there being delimited between said bottom wall, said diagrid support structure and said diagrid an enclosed space which contains said collection tray, said tray dividing said space into upper and lower portions which communicate through said chimney and in the event of deposit of molten fuel on said tray, permitting circulation of liquid metal coolant from said lower to said upper space and thence through a peripheral passage surrounding said tray and allowing a simultaneous downward flow of coolant from said upper to said lower portion thus insuring cooling of molten fuel in said tray.

4,280,873

NUCLEAR POWER INSTALLATION WITH LOOP ARRANGEMENT

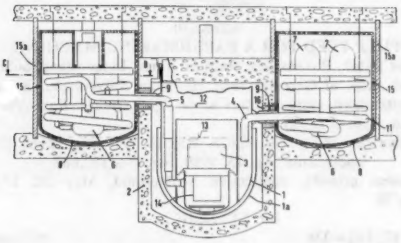
Günter Hahn, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Interatom, International Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,724

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812124

Int. Cl.³ G21C *15/00*

U.S. Cl. 176—65 **6 Claims**



1. Nuclear power installation with liquid metal cooling, comprising a reactor cavity, a primary circulatory loop carrying heat from the reactor cavity, a secondary coolant loop, intermediate heat exchanging means for transferring heat from the primary loop to the secondary loop and means for pumping coolant through the loops, said intermediate heat exchanging means and pumping means being disposed in separately insulated and heated component tanks, portions of the loops connected to said intermediate heat exchanging means and pumping means forming lines leading into the reactor cavity in radial direction thereof and into the component tank in tangential direction thereof, said connecting lines being helically disposed within the component tanks, and at least one of said intermediate heat exchanging means and said pumping means being disposed inside said helix.

4,280,874

NUCLEAR REACTOR CORE STRUCTURE WITH ZONES OF VARYING ENRICHMENT

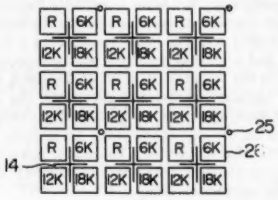
Toshio Kawai, Machida; Junichi Yamashita, and Jun Takamatsu, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1978, Ser. No. 952,660

Claims priority, application Japan, Oct. 21, 1977, 52/126419

Int. Cl.³ G21C *3/30*

U.S. Cl. 176—78 **15 Claims**



1. In a structure of a nuclear reactor core having axially upper and lower regions and radially central and peripheral regions and comprising predetermined fuel assemblies utilized with other fuel assemblies, each of said predetermined fuel assemblies including a plurality of first fuel rods each containing a fissile material and a burnable poison, and a plurality of second fuel rods each containing a fissile material without burnable poison, said first and second rods extending in the

axial direction of said nuclear reactor core when said predetermined fuel assembly is loaded in said nuclear reactor core, the improvement comprising said predetermined fuel assembly having a plurality of said first fuel rods including one group of first fuel rods having respectively an upper part having an upper end portion and a lower part having a lower end portion, said upper and lower parts being separated at the axial middle thereof, said lower part being arranged to be within the axially lower region of said nuclear reactor core and packed with the fissile material of a uniform enrichment, and said upper part being arranged to be within the axially upper region of said nuclear reactor core and packed with the fissile material of a uniform enrichment more abundant than that packed in said lower part, and said one group of said first fuel rods containing the burnable poison having a concentration decreasing from the axial middle toward said upper and lower end portions, and the remaining first fuel rods of said predetermined fuel assembly having respectively and upper end portion, a lower end portion and a middle portion, said upper end portion being arranged to be within the axially upper region of said nuclear reactor core and packed with the fissile material without burnable poison, said lower end portion being arranged to be within the axially lower region of said nuclear reactor core and packed with the fissile material without burnable poison, and said middle portion being packed with the fissile material containing the burnable poison, a plurality of said predetermined fuel assemblies being distributed over said nuclear reactor core in such a way that the concentration of the burnable poison in said first fuel rods and the number of said first fuel rods decrease from said radially central region towards said peripheral region.

4,280,875

SAFETY DEVICE FOR PREVENTING UNSCREWING OF CYLINDER-HEAD SCREWS HAVING AN INNER POLYGON, AND PLASTIC DEFORMATION TOOL FOR USE WITH THE DEVICE

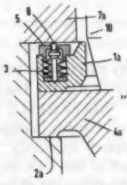
Lothar Werres, Langensendelbach, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,273

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747994

Int. Cl.³ G21C *13/06*

U.S. Cl. 176—87 **10 Claims**



1. Safety device for preventing unscrewing of cylinder head screws fastening two structural members together, one of the structural members having receiving bores formed therein, the screws having heads disposed in said receiving bores and being formed with inner polygonal cutouts, the screws extending through and braced behind the one structural member and being tensioned against and anchored in the other structural member, comprising circular grooves cut into the one structural member at the receiving bores forming plastically deformable ring collars of said one structural member disposed adjacent to the circular grooves and spaced from and surrounding the screw heads so as to form annular gaps therebetween, at least two arcuate recesses formed at equal distances from one another about the periphery of the screw heads, said ring collars having a first set of rotation-preventing wall portions thereof surrounding the screw heads and being pushable into the arcuate recesses in tightened condition of the screws.

4,280,876

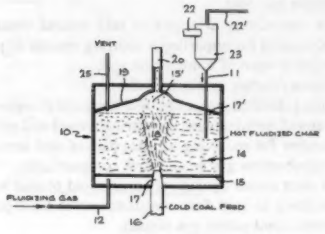
COAL PYROLYSIS PROCESS

Norman W. Green, Upland, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 873,010, Oct. 27, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,312

Int. Cl.³ C10B *47/24, 49/22, 57/08*

U.S. Cl. 201—9 **20 Claims**



1. A process for the pyrolysis in a pyrolysis chamber of agglomerative coal particles, which pass through a tacky state during pyrolysis, without the formation of deposits on the chamber walls, which comprises

(a) maintaining a zone of hot solid particles in a fluidized state in said pyrolysis chamber with a fluidizing gas;

(b) injecting upwardly into said pyrolysis chamber a high velocity fluid jet stream of agglomerative coal particles in a carrier gas, thereby forming an upwardly expanding turbulent fluid jet surrounded by said hot solid particles in the fluidized state whereby the said hot solid particles in the fluidized state disposed around said upwardly expanding turbulent fluid jet are entrained in the upwardly expanding turbulent fluid jet and are mixed with and heat said agglomerative coal particles so that by the time the chamber walls are contacted by said agglomerative coal particles, they are no longer in a tacky state, thereby producing char and product gas from said coal particles; and

(c) removing said product gas, char and the entrained hot solid particles from said pyrolysis chamber, the entrained hot solid particles being removed from the pyrolysis chamber without any appreciable recirculation to the zone of said hot solid particles within the pyrolysis chamber.

4,280,877

APPARATUS FOR PROVIDING COAL DUST TO A REACTION CHAMBER

Gerhard Thomas, and Richard Jung, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,766

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843883

Int. Cl.³ C10B *15/00, 29/00, 31/02*; F27B *1/20*

U.S. Cl. 202—91 **4 Claims**

1. An apparatus for introducing a combustion gas and coal dust to a reaction chamber, said apparatus comprising:

a cylindrical vessel having a closed top and a conical bottom directed towards said reaction chamber;

at least one first conduit means, operatively connected to said vessel, for communicating a source of coal dust and said cylindrical vessel with one another, said vessel coaxially surrounding at least a portion of said at least one first conduit means;

second conduit means, operatively connected to said vessel, for communicating a first stream of combustion gas and said cylindrical vessel with one another;

a central conduit means, operatively connected to said vessel coaxial therewith and forming an extension of said conical bottom thereof, and having an end directed towards said reaction chamber for conveying coal dust and a first combustion gas from said cylindrical vessel toward said reaction chamber;

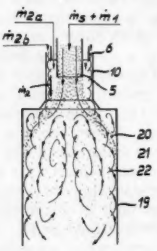
a third conduit means operatively connected to said central conduit means and said reaction chamber for conveying to said reaction chamber at least one second stream of combustion gas; and

means operatively arranged in said second conduit means and located for imparting a swirling motion to part of said second stream of combustion gas;

said third conduit means including;

a housing divided into a first and a second compartment and arranged between said cylindrical vessel and said reaction chamber for receiving at least part of said second stream of combustion gas in said first compartment;

a first duct means operatively connected to said housing for admitting to said first compartment at least part of said second combustion gas stream;



a second duct means operatively connected to said housing for communicating said second compartment with a second combustion gas stream source;

means for imparting a swirl to part of said second combustion gas stream;

an intermediate conduit coaxially surrounding said central conduit means to form therewith a first annular passageway for combustion gas being passed from said first compartment to said reaction chamber, said intermediate conduit having a first end and a second end, said first end being conically widened, operatively connected to said housing, and in communication with said first compartment, said second end of said intermediate conduit being directed towards said reaction chamber and being further away from said reaction chamber than that end of said central conduit means which is directed towards said reaction chamber; and

an outer conduit coaxially surrounding said intermediate conduit to form therewith a second annular passageway for combustion gas being passed from said second compartment to said reaction chamber, said outer conduit having a first end and a second end, said first end being conically widened, operatively connected to said housing, and in communication with said second compartment, said second end of said outer conduit being operatively connected to said reaction chamber.

4,280,878

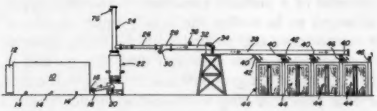
STRUCTURE AND PROCESS FOR RECLAIMING HEAT FROM CHARCOAL PRODUCTION FACILITY

Gerald E. Sprenger, 200 Hazelwood Ave., Dothan, Ala. 36301

Filed Oct. 30, 1979, Ser. No. 89,591

Int. Cl.³ C10B *1/00, 53/02;* **F23D** *13/20;* **F26B** *7/00*

U.S. Cl. 202—93 **10 Claims**



1. In a charcoal production facility including kiln means for transforming wood into charcoal, an apparatus for reclaiming heat produced during said transforming, said apparatus comprising:

first duct means connected to said kiln means for removing wood gases produced during said transforming;

afterburner means connected to said first duct means and including auxiliary fuel burner means for raising said wood gases to an incendiary temperature, said afterburner means emitting products of complete combustion, said after burner means including an exhaust stack;

first damper means disposed proximate to said afterburner means for regulating the temperature of said products of complete combustion emitted from said afterburner means, said first damper means including a controlled exhaust damper disposed across said stack, said exhaust damper permitting a discharge of a selected portion of said products of complete combustion to the atmosphere while directing an undischarged portion to said second duct means;

second duct means for distributing said products of complete combustion from said afterburner means to an end use station; and

second damper means in fluid communication with said second duct means for allowing cooling air to mix with said products.

4,280,879

APPARATUS AND PROCESS FOR RECOVERY OF HYDROCARBONS FROM INORGANIC HOST MATERIALS

William Taciuk, Calgary, Canada, assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Continuation-in-part of Ser. No. 34,098, Apr. 27, 1979, abandoned, which is a continuation of Ser. No. 828,119, Aug. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 603,044, Aug. 8, 1975, abandoned. This application Nov. 6, 1979, Ser. No. 91,910

Claims priority, application Canada, Aug. 5, 1975, 232862

Int. Cl.³ C10B *1/10, 7/00*

U.S. Cl. 202—100 **9 Claims**

1. Apparatus for recovering hydrocarbons from whole oil said containing sand and clay solids in discrete and lump forms, water, bitumen and oversize rocks, said apparatus comprising:

spaced, substantially horizontal generally concentric inner and outer tubular members having first and second ends, said members being connected to rotate together, said inner member forming substantially open preheat and vaporization zones at its first and second ends respectively, said members combining to form a substantially open substantially annular space between them having a

combustion zone at the second end thereof and a heat transfer zone at the first end thereof;

means for supporting and rotating the members;

means for sealing the ends of the outer member and the first end of the inner member; means, extending through the sealing means, for feeding whole oil sand into the preheat zone;

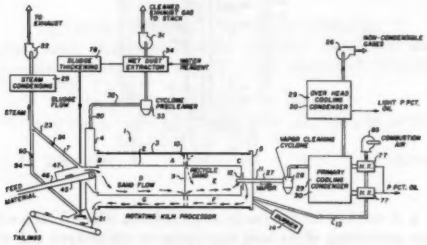
means, carried by the tubular members, for advancing oil sand solids along a path extending through the preheat and vaporization zones and back through the combustion and heat-transfer zones;

said outer member carrying means positioned in the heat transfer zone and adapted to lift hot sand solids being advanced therethrough and to drop them onto a significant portion of the top surface of that section of the wall of the inner member which forms the preheat zone to cause heat to be transferred through such wall section, whereby water in the whole oil sand may be vaporized in the preheat zone and whereby lumps of oil sand may be reduced in size by a combination of heating and cascading effected by rotation of the inner member;

first means, extending through the sealing means, for removing water vapor from the preheat zone;

means, associated with the preheat portion of the inner tubular member, for separating oversize solids from the whole oil sand being advanced through the preheat zone and transferring them into the annular space for disposal;

means, carried by the inner member and extending across



the crosssectional area thereof, for restricting gas movement between the preheat and vaporization zones, said means having means in the outer portion thereof operative to permit remaining preheated tar sand to be advanced from the preheat zone into the vaporization zone;

means, associated with the inner tubular member, for recycling hot sand solids, being advanced through the annular space, into the first end of the vaporization zone for mixing with oil sand issuing from the preheat zone to raise its temperature and thereby vaporize and crack hydrocarbons and produce coked solids, said means cooperating with the hot sand solids to prevent significant gas movement therethrough between the annular space and the vaporization zone;

second means for removing gases from the vaporization zone for recovery;

means, associated with the inner tubular member at its second end, for transferring coked solids from the vaporization zone to the combustion zone, said means cooperating with the coked solids to prevent significant gas movement therethrough between said zones;

said second means extending through the sealing means and being associated with the coked solids transfer means;

means for introducing oxygen-containing gas into the combustion zone for burning coke to produce hot sand solids;

third means, associated with the sealing means, for drawing combustion gas from the annular space for disposal; and

means, associated with the sealing means, for removing sand solids from the heat transfer zone for disposal.

4,280,880

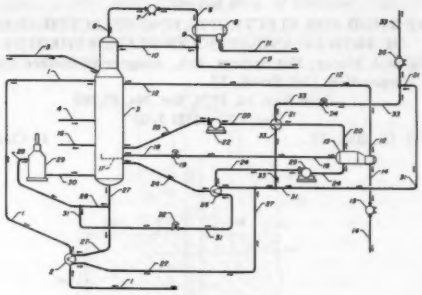
METHOD OF OPERATING AN ISOSTRIPPER COLUMN

Bipin V. Vora, Elk Grove Village, and Anthony G. Vickers, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 25, 1980, Ser. No. 181,032

Int. Cl.³ B01D *3/06;* **C07C** *2/56*

U.S. Cl. 203—23 **8 Claims**



1. A process for the separation of isobutane from an alkylation reaction zone hydrocarbon effluent stream comprising said isobutane, n-butane, propane and alkylate, which comprises the steps of:

(a) passing said effluent stream into a fractionation column operated at fractionation conditions;

(b) separating said propane as an overhead vapor stream;

(c) withdrawing an isobutane vapor stream from said column as an upper intermediate fraction, at least partially condensing said vapor stream by indirect heat exchange with a lower intermediate fraction withdrawn from said column pursuant to step (d), and recovering said isobutane stream;

(d) withdrawing a liquid stream comprising n-butane from said column as said lower intermediate fraction, effecting a reduction in pressure and temperature of said stream, and flashing said stream by indirect heat exchange with said upper intermediate fraction pursuant to step (c);

(e) separating and compressing the resulting vapor phase to form a recycle stream having a temperature and pressure substantially equivalent to the lower intermediate fraction as withdrawn from said column, and introducing said recycle stream into a lower portion of said column at a point above the level of withdrawl of said lower intermediate fraction;

(f) recovering the liquid phase of said mixed phase stream, heating said liquid phase by indirect heat exchange with the alkylate product stream withdrawn as the bottoms fraction with said column, and recycling said liquid phase from said column to the lower portion of said column at a point below the level of withdrawl of said lower intermediate fraction.

4,280,881

SEPARATING INDENE FROM UNSATURATED ALKYLAROMATICS

John C. Montagna, O'Hara Township, Allegheny County; Robert D. Galli, New Kensington, both of Pa., and John Freel, Parker, Colo., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jul. 2, 1980, Ser. No. 165,381

Int. Cl.³ B01D *3/40;* **C07C** *7/08*

U.S. Cl. 203—51 **13 Claims**

1. The method of separating indene in admixture with at least one close boiling mono-olefinically unsaturated aromatic compound by extractive distillation which comprises distilling said mixture comprising indene and at least one close boiling

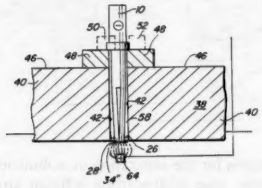
mono-olefinically unsaturated aromatic compound in the presence of at least one liquid oxygen-containing, sulfur-containing or nitrogen-containing organic polar compound having a boiling point at 760 mm Hg of between about 190° and about 300° C., recovering a vapor phase rich in said mono-olefinically unsaturated aromatic compound and recovering a bottoms fraction rich in indene and said organic polar compound.

4,280,882

METHOD FOR ELECTROPLATING SELECTED AREAS OF ARTICLE AND ARTICLES PLATED THEREBY

Ralph J. Hovey, Hot Springs, Ark., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 14, 1979, Ser. No. 97,289
Int. Cl.³ C25D *5/02*
U.S. Cl. 204—15 **19 Claims**



1. A method of electroplating a selected portion of the inner surface of an elongated bore in a conductive article comprising:

immersing at least the section of said article containing said selected portion in an electrolytic plating bath maintained under agitation;

controlling the flow of said bath to minimize electrolyte wetting of areas of said article outside of said selected portion; and

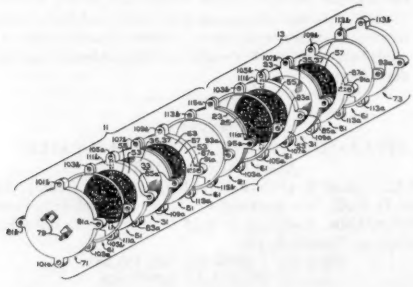
positioning an electrode in close proximity to said bore with said electrode at a generally uniform distance from said selected portion, and establishing an electrical potential between said electrode and said article to produce a generally uniform electrical field against said selected portion.

4,280,883

METHOD OF OPERATING A SOLID POLYMER ELECTROLYTE CHLOR-ALKALI CELL

Carl W. Raetzsch, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 23, 1979, Ser. No. 15,526
Int. Cl.³ C25B *1/46, 9/00*
U.S. Cl. 204—98 **18 Claims**



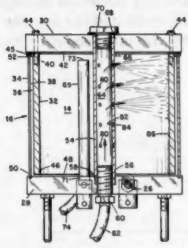
7. In a method of electrolysis comprising feeding aqueous alkali metal chloride brine to an electrolytic cell having an anolyte compartment separated from a catholyte compartment by a solid polymer electrolyte, said solid polymer electrolyte comprising a fluorinated cation exchange membrane having carboxyllic acid groups as the ion exchange groups, an anodic electrocatalyst on the anodic surface thereof and a cathodic electrocatalyst on the cathodic surface thereof; imposing an electrical potential across the solid polymer electrolyte; and withdrawing chlorine from the anolyte compartment and alkali metal hydroxide from the catholyte compartment; the improvement comprising withdrawing liquid chlorine and depleted brine from the cell; and separating the liquid chlorine from the depleted brine.

4,280,884

METHOD AND APPARATUS FOR RECOVERY OF SILVER EMPLOYING AN ELECTROLYTIC CELL HAVING IMPROVED SOLUTION MOVEMENT

James H. Babb, and Johnny C. Cox, both of Oliver Springs, Tenn., assignors to Demco, Inc., Coalfield, Tenn.

Filed Apr. 7, 1980, Ser. No. 138,130
Int. Cl.³ C25C *1/20*
U.S. Cl. 204—109 **4 Claims**



1. A method for the recovery of metallic silver from a solution containing silver ions employing an electrolytic cell that includes a hollow anode disposed concentrically within a hollow cylindrical cathode comprising the steps of

directing said solution into the interior of said hollow anode,

ejecting said solution from said anode through a plurality of apertures through the wall thickness of said anode in a direction toward said cathode, each of said apertures having a divergent exit portion tapered at an angle of between about 40° and 60°, whereby the stream of solution ejected therethrough is of a diverging generally conical geometry.

4,280,885

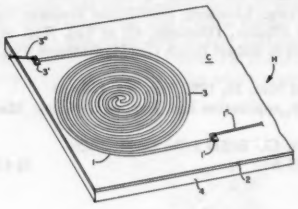
METHOD OF AND APPARATUS FOR ACTIVE ELECTRO-CHEMICAL WATER AND SIMILAR ENVIRONMENTAL CONTAMINANT ELIMINATION IN SEMI-CONDUCTOR AND OTHER ELECTRONIC AND ELECTRICAL DEVICES AND THE LIKE

James W. Savery, 23 Elaine St., Hudson, N.H. 03051

Filed Nov. 9, 1979, Ser. No. 92,695
Int. Cl.³ C25B *1/02, 1/04;* **C25F** *7/00*
U.S. Cl. 204—129 **22 Claims**

1. A method of electrochemically eliminating water and contaminants within an electronic package and the like, that comprises, applying an electric field between a pair of closely spaced co-extensive conductive paths, disposing the paths

along a hygroscopic insulating surface disposed within the package, and adjusting the path dimensions and separation



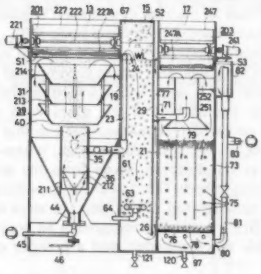
relative to the electric field to hydrolize water within the package into hydrogen and oxygen gases.

4,280,886

METHOD FOR TREATMENT OF SEWAGE

Toshio Sawa; Masayoshi Kubota; Sankichi Takahashi, and Toyohiko Kaneko, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,477
Claims priority, application Japan, Mar. 22, 1979, 54-34592
Int. Cl.³ C02F *1/46, 1/52*
U.S. Cl. 204—149 **17 Claims**



1. A method for a treatment of sewage comprising the steps of:

flocculating suspended matter and organic matter in the sewage by adding flocculant to the sewage to be treated,

firstly processing by providing first bubbles in an amount within the range of 1×10^{-4}–1×10^{-2} on the basis of a sewage quantity by volume and attaching flocculated suspended matter and organic matter to the bubbles to form and to float the latter as scum,

separating and removing the scum from the sewage,

secondly processing by separately thereafter providing second bubbles in an amount within the range of 3–10 on the basis of a sewage quantity by volume to the sewage that has passed said firstly processing step to form foam together with foaming matter in the sewage and to float the foam, and

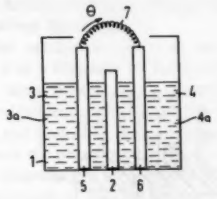
separating and removing the foam from the sewage.

4,280,887

METHOD OF REGENERATING AMMONIACAL ETCHING SOLUTIONS USEFUL FOR ETCHING METALLIC COPPER

Efthimios Konstantouros, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,007
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917597
Int. Cl.³ C02F *1/46; C25F 7/02*
U.S. Cl. 204—150 **11 Claims**



1. A method of regenerating ammoniacal etching solution used for etching metallic copper, comprising:

positioning a metal in contact with a spent ammoniacal etching solution, said metal being more electronegative than copper and, in the pH range of the etching solution, forming a relatively insoluable hydroxide; and

causing electrolysis to occur between said metal and said spent etching solution so that Cu^{++}-ions in said spent etching solution are reduced to metallic copper and the etching chemicals are regenerated while substantially simultaneously said more electronegative metal is oxidized into a relatively insoluble hydroxide.

4,280,888

SCREEN PRINTABLE, UV CURABLE OPAQUE LEGEND INK COMPOSITION

Richard W. Bush, Columbia; Russell J. Jenkins, Woodstock, both of Md., and John E. Rie, Orange, Calif., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 842,182, Oct. 14, 1977, abandoned. This application Feb. 12, 1980, Ser. No. 120,803
Int. Cl.³ C08F *8/00*
U.S. Cl. 204—159.15 **6 Claims**

1. A radiation curable screen printable opaque legend ink which comprises

(a) 15 to 40% by weight of an allyl terminated polyene which is the reaction product of an epoxide and an unsaturated amine,

(b) 5 to 25% by weight of a cocurable allyl terminated polyene having a molecular weight of less than 500 selected from the group consisting of diallyl phthalate, triallyl isocyanurate, diallyl adipate, diallyl azelate, diallyl sebacate, diallyl itaconate, diallyl maleate, diallyl chlorendate, diallyl malate and triallyl cyanurate,

(c) 15 to 45% by weight of a polythiol having a molecular weight in the range from about 94 to 20,000 of the general formula: $R_8—SH)_n$ wherein R_8 is a polyvalent organic moiety free from reactive carbon-to-carbon unsaturation and n is at least 2 and

(d) a pigment member of the group consisting of 0.5 to 25% by weight of zinc sulfide and 0.2 to 1.0% by weight of carbon black, said curable legend ink having a viscosity as measured on a Brookfield viscometer at 1 rpm using an RV7 spindle in the range 8,000 to 250,000 centipoises and a viscosity ratio at 1:10 rpm in the range 1.0 to 7.0.

2. The ink of claim **1** containing in addition 0.05 to 15% by weight of the composition of a photoinitiator.

4,280,889

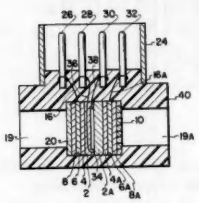
SOLID STATE ION RESPONSIVE AND REFERENCE ELECTRODES

Eugene L. Szonntagh, Flourtown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 666,166, Mar. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 552,284, Feb. 24, 1975, abandoned. This application Feb. 2, 1978, Ser. No. 874,660

Int. Cl.[3] G01N *27/30*

U.S. Cl. 204—195 F 41 Claims



1. A pH electrode comprising
an electrically insulating substrate,
a metallic layer on said substrate,
a solid electrolyte layer on said metallic layer, and
an RF sputtered pH glass layer on said last-mentioned layer and having a thickness of 10 to 10,000 Angstroms.

5. A reference electrode comprising
an electrically insulating substrate,
a metallic layer on said substrate,
a solid electrolyte layer on said metallic layer and
a cracked glass layer on said electrolyte layer and having a coefficient of thermal expansions substantially mismatched with respect to a coefficient of thermal expansion of said electrolyte layer to produce differential expansion therebetween.

8. A combination electrode comprising
an electrically insulating substrate means,
a first metallic layer on said substrate means,
a first solid electrolyte layer on said metallic layer,
a pH glass layer on said electrolyte layer,
a second metallic layer on said substrate means and electrically insulated from said first metallic layer, said first electrolyte layer and said pH glass layer,
a second solid electrolyte layer on said second metallic layer and electrically insulated from said first metallic layer, said first electrolyte layer and said pH glass layer, and
a cracked glass layer on said second electrolyte layer and electrically insulated from said first metallic layer, said first electrolyte layer and said pH glass layer, said second glass layer having a coefficient of thermal expansion mismatched with respect to said second electrolyte layer to produce differential expansion therebetween.

17. An ion concentration measuring electrode comprising
an electrically insulating substrate,
a metallic layer on said substrate,
a solid electrolyte layer on said metallic layer, and
an RF sputtered ion selective layer on said last-mentioned layer.

4,280,890

ELECTROCHEMICAL SENSOR FOR OXYGEN CONCENTRATION DETERMINATION IN GASES AND METHOD OF MAKING THE SAME

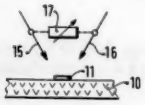
Karl-Hermann Friese, Leonberg; Wolf-Dieter Haecker, Asperg, and Bürkhard Pfeiffer, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,453

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911042

Int. Cl.[3] B05D *1/34;* G01N *27/58*

U.S. Cl. 204—195 S 24 Claims



1. Electrochemical sensor for determination of the concentration of oxygen in gases, particularly in gases resulting from combustion processes, such as exhaust gases from internal combustion engines, having
an ion conductive solid electrolyte body (**10**) and
an electrode (**11**) applied to a surface thereof, adapted to be exposed to the gases,
said electrode comprising a mixture of a ceramic and a noble metal which catalyzes the thermodynamic equilibrium of the gases with respect to a reference,
wherein, in accordance with the invention,
the concentration of noble metal in the electrode is non-uniform, in cross section, and decreases in the direction away from the surface of the solid electrolyte body (**10**) towards the surface of the electrode exposed to the gases.

14. Method of manufacturing an electrochemical sensor for the determination of oxygen concentration in gases, particularly in gases resulting from a combustion process, such as exhaust gases from an internal combustion engine, having
an ion conductive solid electrolyte body (**10**);
and an electrode applied to a surface thereof adapted to be exposed to the gases, and which is composed of a mixture of a ceramic and a noble metal which catalyzes the thermodynamic equilibrium of the gases with respect to a reference, and which is characterized in that the concentration of nobel metal, in cross section, is non-uniform and decreases in the direction away from the surface of the solid electrolyte body (**10**) towards the surface exposed to the gases, said method comprising the steps of
providing a first suspension comprising an aqueous mixture of the noble metal powder, and a powder of a ceramic material;
providing a second aqueous suspension of the powder of the ceramic material alone;
applying said first suspension to the surface of the solid electrolyte material where the electrode is to be applied and decreasing the rate of application of said first suspension while beginning to apply the second suspension at an increasing rate until the requisite electrode layer thickness is reached.

4,280,891

ELECTRODE ASSEMBLY FOR MELT CELL

Ramaswami Neelameggham, Salt Lake City, Utah, assignor to AMAX Magnesium Corporation, Greenwich, Conn.

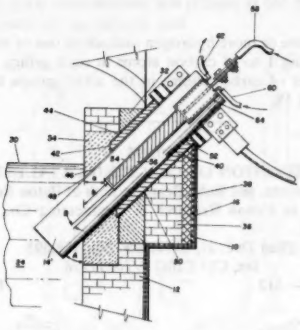
Filed May 17, 1979, Ser. No. 39,797

Int. Cl.[3] C25C *7/02*

U.S. Cl. 204—243 R 7 Claims

1. An electrolytic melt cell, comprising a refractory lined shell including refractory lined sidewalls having at least one elongated graphite electrode assembly extending into said cell

through said walls at an angle of from 40° to 50° with respect thereto, said elongated graphite electrode having a central longitudinal axis, a first end adapted to be placed into contact with a material to be heated, and a second end having an open area extending into said graphite electrode along a path proximate to said central axis; and a water cooled metal core contained within said open area of said graphite electrode and adapted to be connected to a source of electrical current, said metal core having a configuration which tapers from said first



end toward said second end of said electrode whereby said metal core expands due to exposure to a temperature gradient extending along said electrode created by contact with said material to be heated, said tapered metal core thereby expanding to a configuration that is sufficient to create good electrical contact between said electrode and said metal core but not sufficient to cause cracking of said graphite electrode due to compressive forces created by contact between said core and said electrode.

4,280,892

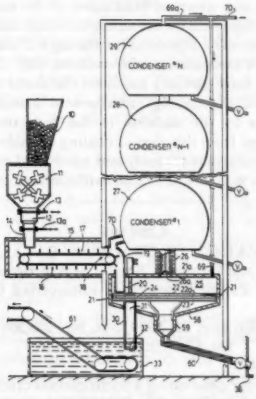
PROCESS AND APPARATUS FOR THE SEPARATION OF HYDROCARBONS FROM PETROLEUM BEARING MATERIALS

Jaroslav J. Havlik, Cambridge, Canada

Continuation-in-part of Ser. No. 974,362, Dec. 29, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,571

Int. Cl.³ C10B *1/06, 53/06*

U.S. Cl. 208—8 R **17 Claims**



1. An apparatus for the separation of bitumen crude petroleum from tar sands, and other oil bearing solid materials through destructive distillation and thermal cracking; and the collection of the vapours so produced as multiple fractionated hydrocarbons, said apparatus having means for breaking up the materials into a particulate condition:

(i) a closed destructive distillation chamber;

(ii) means housed in the chamber for heating the oil bearing solid materials to vapourize the bitumen crude petroleum and for transporting all the materials through the chamber, said means comprising:

(iii) an upper perforated electrically heatable plate and a lower imperforate electrically heatable plate, said plates being arranged in fixed spaced apart relationship, said upper plate having an oil bearing materials inlet and the lower plate having a tailings discharge outlet for the discharge of tailings therethrough;

(iv) a material transporter mounted for uni-directional movement with a clearance fit between said plates, said transporter being divided into a plurality of uniformly sized material holding compartments; the said plates forming the top and bottom of the said compartment and the space between the plates constituting a retort;

(v) means for depositing at the inlet end of the chamber, in each compartment in turn, a measured amount of the material during travel of the transporter as it passes the material inlet;

(vi) drive means for moving said transporter in a direction to move the material at a regulated speed of travel through the retort from the material inlet to the discharge outlet, said drive means being synchronized with the depositing means;

(vii) means for controlling the temperature of the plates to heat the material in the compartments to vapourize said bitumen crude petroleum during the travel of the material through the retort;

(viii) collecting means for recovering vapourized hydrocarbons in a liquified condition; and

(ix) means for ejecting, tailings from each compartment in turn as each compartment registers with the tailings outlet and recovering them under conditions inhibiting the admission of ambient air to the retort.

6. A method for the separation of bitumen crude petroleum from tar sands, oil-shale and other oil bearing materials through distillation and thermal cracking and the collection of the vapours so produced as multiple fractionated hydrocarbons, comprising the following steps:

(i) breaking up the materials to a particulate size approximating the physical dimensions of sand particles and storing same in a storage bin sealed against the admission of the ambient air;

(ii) depositing a measured amount of the materials on a rotating transporter divided into a plurality of material holding compartments travelling between and in close proximity to an upper perforate plate and a lower imperforate plate, said upper plate having a material inlet and the lower plate having a waste outlet, said plates forming a retort mounted in a distillation chamber having a material inlet at one end and a waste outlet at the other, said materials being deposited in each compartment through the inlet and the tailings being ejected through the waste outlet under conditions inhibiting the admission of ambient air to the chamber;

(iii) heating the plates by means of electricity to a temperature to heat the materials the retort to the distillation temperature to distill substantially all the bitumen crude petroleum of the materials and vapourize said petroleum; and

(iv) collecting the resultant vapourized hydrocarbons, in solid, liquid and gaseous form.

4,280,893

INTEGRATED COAL CONVERSION PROCESS

Arnold M. Leas, 309 E. Van Buren, Columbia City, Ind. 46725

Division of Ser. No. 858,045, Dec. 6, 1977, Pat. No. 4,132,627. This application Sep. 26, 1978, Ser. No. 945,828

Int. Cl.[3] C10G *1/06, 35/00;* C10B *57/08*

U.S. Cl. 208—10 15 Claims

1. A method of converting coal to liquid and gaseous fuels comprising the steps of:

(a) introducing coal having a moisture content of from about 10 wt. % to about 30 wt. % into a vertically elongated coal reactor having a fluidized bed of sand and/or clay in the bottom portion thereof;

(b) introducing superheated hydrogen at a temperature of from about 1000° F. to about 1800° F. into the bottom of said coal reactor;

(c) transforming said moisture to steam to disintegrate said coal; and

(d) converting said disintegrated coal at a temperature from about 1200° F. to about 1700° F. to liquid and gaseous fuels comprising carbon monoxide and hydrogen.

4,280,894

HIGH THERMAL STABILITY LIQUID HYDROCARBONS AND METHODS FOR PRODUCING THEM

William F. Taylor, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 417,723, Nov. 21, 1973, abandoned. This application Jun. 4, 1975, Ser. No. 583,656

Int. Cl.[3] C10L *1/24, 1/22*

U.S. Cl. 208—15 12 Claims

1. A method for increasing the thermal stability of a hydrocarbon mixture comprising the steps of:

(a) separating therefrom at least a portion of the sulfur present therein in the form of an organic sulfur compound classed as a thiol, sulfide, disulfide, or polysulfide such that the total concentration thereof is less than 10 ppm;

(b) separating at least a portion of the reactive olefins therein such that the concentration thereof remaining is less than 0.2% by volume;

(c) separating at least a portion of the molecular oxygen dissolved therein such that the concentration thereof remaining is less than 15 ppm, and

(d) adding a dibenzothiophene compound selected from the group consisting of dibenzothiophene and the alkyl substituted dibenzothiophenes containing 1 to 8 alkyl groups, the alkyl groups containing from 1 to 4 carbon atoms.

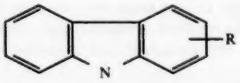
2. A method for increasing the thermal stability of a hydrocarbon mixture comprising the steps of:

(a) separating therefrom at least a portion of the sulfur present therein in the form of an organic sulfur compound classed as a thiol, sulfide, disulfide, or polysulfide such that the concentration thereof remaining is less than 10 ppm;

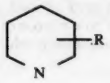
(b) separating at least a portion of the reactive olefins therein such that the concentration thereof remaining is less than 0.2% by volume;

(c) separating at least a portion of the molecular oxygen dissolved therein such that the concentration thereof remaining is less than 15 ppm, and

(d) adding an organic nitrogen compound selected from the group consisting of the paraffinic amines having the general formula RNH_2 where R is an alkyl group having 1 to 22 carbon atoms, the carbazoles having the general formula



where R can be one or more hydrogen radicals or one or more alkyl groups having from 1 to 12 carbon atoms in each group, with the total number of carbon atoms in the alkyl groups being no greater than 12 and the piperidines having the general formula



where R is one or more hydrogen radicals or one or more alkyl groups having 1 to 18 carbon atoms in each group, with the total number of carbon atoms in the alkyl groups being not greater than 18.

4,280,895

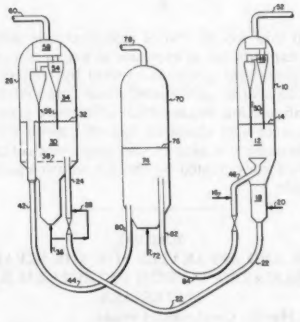
PASSIVATION OF CRACKING CATALYSTS

Gordon F. Stuntz, and Roby Bearden, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,395

Int. Cl.[3] C10G *9/16, 11/18*

U.S. Cl. 208—113 10 Claims



1. A method for passivating a catalyst utilized to crack hydrocarbon feedstock to lower molecular weight products in a reaction zone where the feedstock contains at least two metal contaminants selected from the glass consisting of nickel, vanadium and iron and where at least some of the metal contaminants become deposited on the catalyst, which comprises passing the catalyst after regeneration through a reduction zone maintained at a temperature above about 600° C. for a time sufficient to at least partially passivate the metal contaminants on the catalyst, a reducing environment maintained in the reduction zone by the addition to the reduction zone of a material selected from the class consisting of hydrogen, carbon monoxide and mixtures thereof, said passivated catalyst thereafter passing to said reaction zone without further processing.

4,280,896

PASSIVATION OF CRACKING CATALYSTS

Roby Bearden, and Gordon F. Stuntz, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,396

Int. Cl.[3] C10G *9/16, 11/18*

U.S. Cl. 208—113 7 Claims

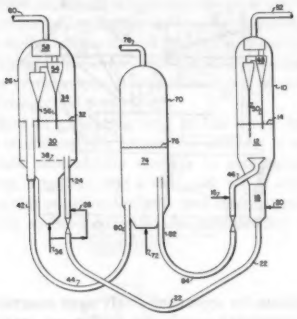
1. A method for passivating a hydrocarbon cracking catalyst utilized to crack hydrocarbon feedstock to lower molecular weight products in the reaction zone of a catalytic cracking system comprising a reaction zone and a reduction zone, where the feedstock contains at least one metal contaminant selected from the class consisting of nickel, vanadium, and iron, and

where at least some of said metal contaminant becomes deposited on the catalyst such that at least a major portion of the total of said metal contaminants deposited on the catalyst comprises only one of said metal contaminants,

and where said metal contaminant contributes to excessive hydrogen and coke production, the method comprising:

A. monitoring the composition of said metal contaminant deposited on the catalyst;

B. adding an effective passivating amount of at least one of said metal contaminants not present as the major contaminant on the catalyst; and



C. passing the catalyst from the reaction zone through a reduction zone maintained at an elevated temperature for a time sufficient to at least partially passivate said metal contaminants on the catalyst and thereby minimize excessive hydrogen and coke production, while a reducing environment is maintained in said reduction zone by the addition to the reduction zone of a material selected from the class consisting of hydrogen, carbon monoxide and mixtures thereof.

4,280,897
REMOVAL OF CONTAMINATING METALS FROM FCC CATALYST BY NH_4 CITRATE CHELATES

Syed M. Shah, Berwyn, and Hosheng Tu, Shorewood, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 27, 1980, Ser. No. 153,806
Int. Cl.³ C10G *11/00*
U.S. Cl. 208—113 **4 Claims**

1. A catalytic cracking process for converting a hydrocarbon feedstock, contaminated with a metal comprising nickel, vanadium, iron or copper, into lower boiling hydrocarbon products by contacting said feedstock with a cracking catalyst in a cracking zone wherein said cracking catalyst is poisoned and contaminated by said metal present in said feedstock, at least a portion of said metal contaminating said cracking catalyst being removed by:

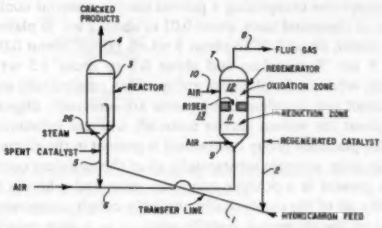
(a) contacting said metal contaminated catalyst with an aqueous solution of ammonium citrate to effect a chelation of said contaminated metal with said ammonium citrate, the central atom of said chelation comprising nickel, vanadium, iron or copper and the ligands of said chelation comprising molecules of said ammonium citrate; and

(b) separating said chelated metal and ligands from said cracking catalyst to substantially reduce the quantity of hydrogen production in said cracking zone.

4,280,898
FLUID CATALYTIC CRACKING OF HEAVY PETROLEUM FRACTIONS

David F. Tatterson, and Iacovos A. Vasalos, both of Downers Grove, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 5, 1979, Ser. No. 91,470
Int. Cl.³ C10G *9/16, 11/05*
U.S. Cl. 208—119 **18 Claims**



1. A process for the fluid catalytic cracking of hydrocarbon feedstocks containing metal compounds and organic sulfur compounds wherein the sulfur content of said feedback is in the range from about 0.1 weight percent to about 12 weight percent, wherein (i) metal deposits on the used cracking catalyst are deactivated in sufficient amounts to reduce hydrogen and coke formation during said cracking, (ii) sulfur oxide emissions from sulfur-containing coke deposits on the used cracking catalyst are reduced in amount, (iii) coke deposits on the used cracking catalyst are reduced in amount sufficiently by regeneration whereby the said catalyst is suitable for re-use, which process comprises;

(a) cracking said feedstock at a temperature from about 850° F. to about 1500° F. in a reaction zone in contact with fluidized solid particles, the said particles comprising a cracking catalyst and at least one metallic reactant in the same or different ones of said solid particles, said metallic reactant consisting essentially of one or more members selected from the group consisting of sodium, scandium, titanium, chromium, molybdenum, manganese, cobalt, nickel, antimony, copper, zinc, cadmium, the rare earth metals, lead, their compounds and mixtures thereof, and wherein said metallic reactant is present in sufficient amount to effect a reduction of at least 50% of the sulfur oxides produced by oxidation of the sulfur-containing coke deposits;

(b) withdrawing of said particles from said reaction zone;

(c) subjecting said particles to a reducing zone wherein carbon monoxide from limited combustion of said sulfur-containing coke deposits is present in a concentration from about 4 to 14 volume percent;

(d) withdrawing said particles from said reducing zone;

(e) subjecting the said particles to an oxidizing zone containing sufficient oxygen to raise the excess molecular oxygen in the flue gas emitted from said oxidizing zone to over 0.1 volume percent and wherein the carbon monoxide content in said flue gas is less than about 4 volume percent;

(f) withdrawing the said particles from said oxidizing zone whereby the said particles are in a condition suitable for re-use in the said reaction zone.

4,280,899

HYDROCARBON DEHYDROCYCLIZATION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 905,907, May 15, 1978, Pat. No. 4,199,438. This application Mar. 31, 1980, Ser. No. 135,586
The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.
Int. Cl.[3] C10G *35/06*; C07C *2/52*
U.S. Cl. 208—139 26 Claims

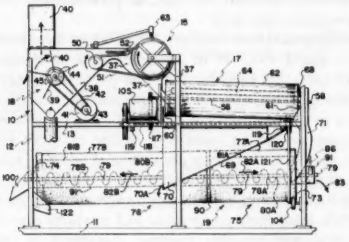
1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at hydrocarbon dehydrocyclization conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % tantalum and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available cobalt and tantalum components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the tantalum component is present in a positive oxidation state; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon dehydrocyclization conditions or in a mixture of these states.

4,280,900

ROTARY SEED CLEANER

J. Harvey Gjesdal, Box 245, Birch Hills, Saskatchewan, Canada S0J 0G0

Filed Feb. 25, 1980, Ser. No. 124,290
Int. Cl.[3] B07B *15/00*
U.S. Cl. 209—34 31 Claims



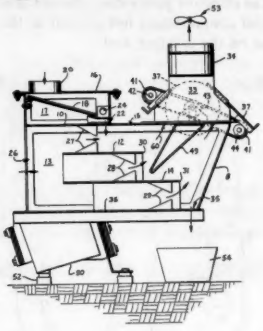
1. A rotary cleaner for grain seeds and the like comprising in combination a supporting framework, a source of power, a scalper drum separator mounted within said framework, an intake auger operatively connected to said scalping drum separator and rotated thereby, separating means for separating seed by widths, the discharge of the desirable fraction from said scalper drum feeding into said separator means, said separator means separating seed into a desirable and an undesirable fraction by width, and an indent separator in said framework, receiving the desirable fraction from said separator means and separating the seed into desirable and undesirable fractions by length, all of said separators being operatively connected to said source of power, said indent separator means including a first section removing seeds shorter than the desired length and a second section for removing seeds longer than the desired length.

4,280,901

METHOD AND APPARATUS FOR SEPARATING FINELY SIZED MATERIALS

Mieczyslaw Budzich; Forest G. Fitz, Jr., both of Lexington, and Andrew M. Lawrence, Richland, all of S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Jul. 6, 1979, Ser. No. 55,873
Int. Cl.[3] B07B *4/04*
U.S. Cl. 209—154 5 Claims



1. Apparatus for separating finely sized materials of diverse weights comprising a housing having an opening through which materials may be introduced for separation, an air intake through which air may be introduced, and an air outlet through which an air stream may exit; means for forcing air into said housing through said air intake and out of said housing through said air outlet; a series of steps mounted within said housing over which the materials may cascade; means for channeling air introduced into said housing through said air intake into at least one air stream which passes between adjacent steps of said series of steps whereby the air stream may pass through the cascading materials and entrain the lighter materials; valve means for controlling the flow of the air stream out of the housing through said air outlet; means for sensing the aggregate weight of the materials in said housing at any one time; and means for controlling said valve means in response to the materials weight sensed by said sensing means.

4. A method of separating finely sized materials of diverse weights wherein the materials are gravitated over a series of steps as a cascade while streams of air are flowed transversely through the cascade whereupon lighter materials are drawn from the cascade and entrained in the air streams; wherein the weight of the materials during separation is sensed; and wherein the rate of flow of the air streams is controlled in response to the sensed materials weight.

4,280,902

SEPARATION OF DENSE IMPURITIES FROM A FLUID

Finn Jacobsen, and Lennart Gustavsson, both of Karlstad, Sweden, assignors to Kamyr Aktiebolag, Karlstad, Sweden

Filed Jun. 30, 1980, Ser. No. 164,918
Claims priority, application Sweden, Jul. 4, 1979, 7905853
Int. Cl.[3] B04C *5/10*
U.S. Cl. 209—211 21 Claims

1. Apparatus for removing dense impurities from a fluid comprising

a vertically upstanding tank substantially circular in cross-section and including a top wall, bottom wall, and side wall;

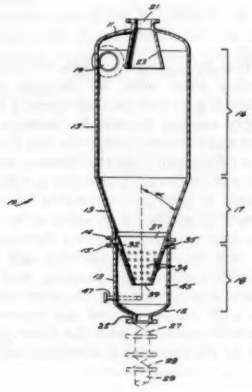
means for introducing fluid having impurities into said tank adjacent to the top wall thereof and tangentially to the side wall, to impart whirling motion to the fluid within the tank;

a fluid outlet disposed substantially centrally in the top wall of the tank;

an impurities outlet disposed substantially centrally in the bottom wall of the tank; and

means for preventing vertical stagnation of dense impurities against the side wall interior at a particular vertical level without dampening the whirling motion imparted to the fluid, said means comprising: a funnel means; means defining perforations larger than the average dimensions of the impurities in said funnel means at areas thereof wherein stagnation of dense impurities is likely to occur; and means for operatively mounting said funnel means to said tank side wall between said fluid inlet and said impurities outlet so that dense impurities being separated must pass through said funnel means in transit to said impurities outlet, and so that said funnel means at said perforated areas thereof is spaced from said tank side wall and said impurities outlet is in open communication with the interior of said funnel means through said perforations.

20. A method of separating sand or like dense impurities from a fluid containing the impurities, utilizing a vertically upstanding tank substantially circular in cross-section and including a top, a bottom, and a side wall; a first conduit extending into communication with the tank interior and extending tangentially to the side wall; a second conduit disposed



substantially centrally in the top wall of the tank; and a third conduit disposed substantially centrally in the bottom wall of the tank; said method comprising the steps of:

(a) continuously introducing fluid containing sand or like dense impurities into the first conduit to impart a whirling motion to the fluid within the tank;

(b) continuously removing fluid with the sand or like dense impurities separated therefrom through the second conduit;

(c) periodically removing sand or like dense impurities separated from the liquid through the third conduit; and

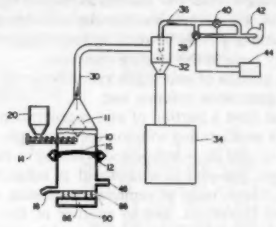
(d) preventing vertical stagnation of sand or like dense impurities against the side wall interior at a particular vertical level without dampening the whirling motion imparted to the fluid by utilizing a funnel having an open large first end and a small second end with perforations disposed in at least the area of the funnel adjacent the second end: and by operatively mounting the funnel to the tank side wall, so that the first end thereof is vertically above the second end thereof, so that all sand or like dense impurities to pass through the third conduit must pass through the funnel, and so that the funnel at the areas thereof containing the perforations is spaced from the tank side wall and in open communication with the third conduit.

4,280,903

APPARATUS FOR SEPARATING SAND FROM BOTANICAL FINES

David L. Scholten, Taylorsville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Aug. 6, 1980, Ser. No. 175,569
Int. Cl.³ B03B *4/00*
U.S. Cl. 209—469 **7 Claims**



1. An apparatus for separating the components of a mixture of sand and botanical fines comprising:

(a) a substantially enclosed chamber;

(b) an opposed pair of rotatively movable juxtaposed members horizontally disposed within said chamber;

(c) means for rotatively adjusting said porous members;

(d) means for vibrating said chamber;

(e) means for introducing said mixture into said chamber above said porous members;

(f) means for passing a moving stream of gas up through said porous members toward said mixture; and,

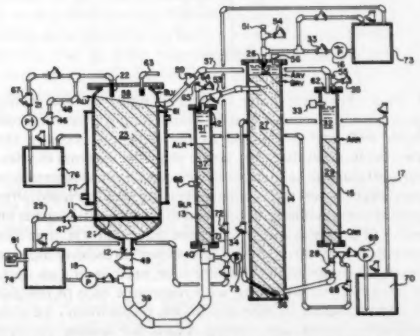
(g) means for collecting said botanical fines downstream from said chamber, said collecting means being in flow communication with said chamber.

4,280,904

HIGH CAPACITY FOLDED MOVING BED ION EXCHANGE APPARATUS AND METHOD FOR TREATING PHOSPHORIC ACID

Lee G. Carlson, Willow Springs, Ill., assignor to American Petro Mart, Inc., Bartow, Fla.

Continuation-in-part of Ser. No. 895,817, Apr. 12, 1978. This application Jan. 31, 1979, Ser. No. 7,980
Int. Cl.³ B01D *15/02*
U.S. Cl. 210—676 **46 Claims**



34. A high capacity moving-bed ion exchange method, comprising:

providing a movable ion exchange resin bed within a plurality of columns, said plurality including a loading column, a loading reservoir column, a regeneration column, and a regeneration reservoir column;

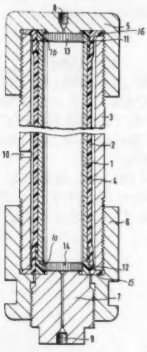
flowing a raw phosphoric acid feed liquid through said loading column to remove ionic materials therefrom;
passing spent resin beads from and out of said loading column to said regeneration reservoir column;
transferring a portion of loading reservoir column having purged and rinsed resin into said loading column;
transferring a portion of said regeneration column into said loading reservoir column;
purging said loading reservoir column to remove liquid from intersticies of resin therein and thereby semi-dry the resin;
rinsing said semi-dry resin by moving rinse liquor through the semi-dry resin in the loading reservoir;
transferring a portion of said regeneration reservoir column into said regeneration column; and
regenerating at least a portion of said regeneration column by passing a regenerating solution therethrough;
wherein each of said steps is repeated whereby in one of the flowing steps phosphoric acid liquid is subjected to a cationic exchange resin to remove magnesium and calcium cations therefrom, and in another of the flowing steps phosphoric acid liquid is subjected to anionic exchange resin to recover uranium values therefrom.

4,280,905

CHROMATOGRAPHY COLUMN

Werner Gunkel, Rossdorf, and Friedhelm Eisenbeiss, Griesheim, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,307
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2930962
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **8 Claims**



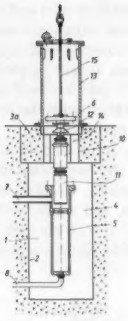
1. In a chromatography column adapted for use in high pressure liquid chromatography comprising a glass tube open at both ends and positioned axially within a pressure tube having an internal diameter larger than the external diameter of the glass tube so as to provide a circumferential intermediate space therebetween and having an aperature in the wall thereof to provide communication between the intermediate space and a source of a pressurizing fluid when the column is connected therewith; a pair of removable screw caps threadably mounted on respective ends of the pressure tube, each having an aperature therein, communicating with respective ends of the glass tube and providing an inlet and outlet, respectively, for chromatography eluent; and sealing means for sealing the open ends of the glass column from the intermediate space, the improvement wherein the sealing means comprises a flexible tubular shaped membrane positioned in the intermediate space and extending the length of the glass tube so as to provide a sleeve therefor which separates the glass tube from the pressurizing fluid.

4,280,906

FILTER FOR SEPARATING SOLID CONTAMINANTS FROM A FLUID, ESPECIALLY SOLID CONTAMINANTS IN A REACTOR COOLING WATER USED IN NUCLEAR REACTOR PLANTS

Lennart Liljegren, Vesteras, Sweden, assignor to AB Asea-Atom, Vesteras, Sweden

Filed Nov. 21, 1979, Ser. No. 96,305
Int. Cl.³ B01D *27/02*
U.S. Cl. 210—282 **9 Claims**



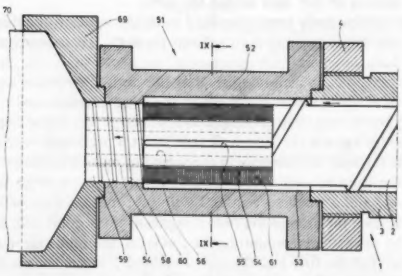
1. A cartridge filter for separating radioactive contaminants from reactor cooling water used, for example, in nuclear power plants, comprising, at least one top opening filter housing having a supply conduit thereon for admitting cooling water to be filtered and a return conduit thereon for returning the filtered water, a lid covering said top opening, said housing having in its upper part an inwardly directed annular shoulder defining a valve seat, at least one removable filter cartridge containing filter material and being provided at its upper part with an outwardly directed supporting ring thereon in sealing engagement with said shoulder for carrying said filter cartridge freely suspended within said housing, said cartridge dividing said housing into two separate chambers respectively in communication with said supply and said return conduits, and said lid being interconnected with the filter cartridge so that by lifting said lid the cartridge is simultaneously lifted.

4,280,907

SEPARATING DEVICE

Wilhelm Häberle, Industriegelände, 7487 Scheer, Wurtt, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,513
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—408 **4 Claims**



1. A screening device for separating a plasticized material from a mixture of plasticized material and non-plasticized solid material comprising, a separating head for receiving the materials, said head including a housing having a bore extending

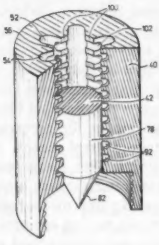
therethrough intermediate an entrance end and an exit end for receiving and passing the materials, material supply means connected to said head to supply the materials to the entrance end of the bore, a plurality of successively arranged annular discs arranged in a closely spaced relationship with each other in said bore, said discs having opposite side faces, each disc having a peripheral surface and a central aperture extending between its side faces defining an inner surface, said discs being concentrically aligned about a central axis so that said inner surfaces define a central bore in said housing bore, said discs being shaped and located relative to each other so as to define a radially extending passage between adjacent side faces of successive discs, said passage being dimensioned to screen said passage from receiving the non-plasticized solid material, said material supply means delivering the mixture to at least one of said surfaces of said discs so as to expel at least part of the plasticized material through each of said passages and convey at least part of the mixture including the solid material to said at least one surface, means connected to said discs for rotating said discs, and a scraper abutting said at least one surface for scraping the solid material therefrom.

4,280,908

INJECTION MOLDING FILTER ASSEMBLY

John Lord, Georgetown, and Jobst U. Gellert, Glen Williams, both of Canada, assignors to Mold-Masters Limited, Georgetown, Canada

Continuation-in-part of Ser. No. 60,827, Jul. 25, 1979. This application Jun. 24, 1980, Ser. No. 162,809
Claims priority, application Canada, Jul. 20, 1979, 332292
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—446 **9 Claims**



1. An improved injection molding filter assembly to filter pressurized melt flowing therethrough towards a gate comprising:

(a) an elongated hollow outer member having a central longitudinal axis, a first end and a second end, the first end having an inlet opening and the second end having an outlet opening, the outer member having a fluted inner surface defining an even number of inwardly opening longitudinally extending channels with narrow elongated lands therebetween, the lands each having an inner surface and all being located an equal distance from the central axis, alternating ridges and grooves extending laterally across the inner surfaces of the lands, alternate ones of the channels extending from the inlet opening to first blind ends towards the second end of the outer member, the other intervening channels extending from the outlet opening to second blind ends towards the first end of the outer member, and

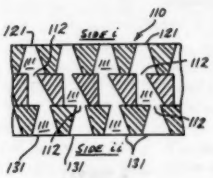
(b) a generally cylindrical elongated inner torpedo member having an outer surface, the inner member being centrally located and longitudinally secured in the outer member to extend at least between the first and second blind ends, the ridges on the inner surfaces of the lands extending substantially to the outer surface of the inner member whereby the grooves form a plurality of separate filtering apertures between the outer surface of the inner member and the inner surfaces of the lands through which the melt flows from the inlet channels to the outlet channels, impurities too large to pass through the filtering apertures being accumulated at the blind ends of the inlet channels.

4,280,909

MICROPOROUS MEMBER WITH INTERCONNECTED, ORIENTED TAPERED VOIDS

Daniel H. Deutsch, 141 Kenworthy Dr., Pasadena, Calif. 91105

Continuation-in-part of Ser. No. 910,110, May 30, 1978, abandoned. This application May 14, 1979, Ser. No. 38,586
The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.
Int. Cl.³ B01D *31/00, 53/22*
U.S. Cl. 210—490 **4 Claims**



1. A microporous membrane of a relatively fluid impermeable material having first and second surfaces, permeated by numerous asymmetric pores comprising a series of sequentially directly interconnected generally tapered voids, wherein substantially all of the generally tapered voids are oriented such that the apexes of said generally tapered voids are directed toward the first surface of the microporous membrane and substantially all of the bases of the generally tapered voids are directed toward the second surface of the microporous membrane, and wherein a fluid, upon passing completely through the microporous membrane will pass through at least three and generally less than 10,000,000 sequentially connected generally tapered voids, and wherein the microporous membrane is greater than about 0.001 micron in thickness and less than about 100 centimeters in thickness, and wherein the average distance across the base of each of the generally tapered voids is greater than about 0.001 micron and less than about 100 micron and wherein the average angle at the apex of each of the generally tapered voids is greater than about 10° and less than about 160°, and wherein the average distance across the ports interconnecting the generally tapered voids is greater than about 0.0002 micron and less than about 100 microns, and wherein the pores interconnecting the voids are fluid impervious so that fluid can only flow through the voids and interconnecting ports and wherein there are on the average at least two and less than 16 ports interconnecting each of the generally tapered voids, and wherein the average number of asymmetric pores passing through the microporous membrane is greater than about 10 per square centimeter.

4,280,910

METHOD AND APPARATUS FOR CONTROLLING AERATION IN BIOLOGICAL TREATMENT PROCESSES

Edward J. Baumann, 3109 Walden Ct., Columbus, Ohio 43220

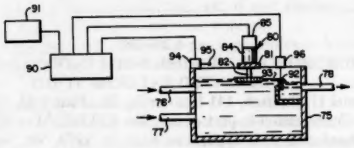
Filed Mar. 10, 1980, Ser. No. 128,535
Int. Cl.³ C02F *3/16*
U.S. Cl. 210—614 **13 Claims**

1. In the biological treatment process for treating waste where air is introduced to the waste to affect aerobic decomposition thereof, the operations of controlling the process and maintaining the efficiency thereof comprising:

(a) introducing air into the waste with air supply means,

(b) measuring the waste load entering the process, and controlling the amount of air introduced by the air supply

means into the waste, dependent upon the measured waste load, and



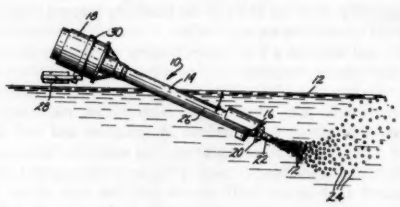
(c) sensing the temperature of ambient air entering the air supply means, and controlling the amount of air supplied by the air supply means, dependent upon the sensed ambient temperature.

4,280,911

METHOD FOR TREATING WATER

Daniel J. Durda, Spring Park, Minn., and John T. Quigley, Madison, Wis., assignors to Aeration Industries, Chaska, Minn.

Continuation of Ser. No. 934,412, Aug. 17, 1978, abandoned.
This application Jun. 19, 1980, Ser. No. 161,151
Int. Cl.³ C02F *3/02, 1/74*
U.S. Cl. 210—629 **16 Claims**



1. A method of treating a bounded body of water with a propeller type aerator comprising the steps of:

(a) aerating a bounded body of water with a plurality of propeller type aerators, each aerator having a hollow tube with opposite ends, a longitudinal axis extending between the ends and a propeller adjacent one of the ends;

(b) placing each of said aerators in the bounded body of water with said propeller and tube end adjacent thereto below the top surface of said water and with the longitudinal axis of each aerator disposed at an angle below horizontal;

(c) driving the aerators to create individual flow patterns around each of the aerators;

(d) mixing the water by arranging the aerators in a disposition to link the individual flow patterns created by adjacent aerators to one another to form a larger closed overall flow pattern;

(e) injecting oxygen through said tube into the body of water adjacent said propeller at a rate greater than 1 pound of oxygen per horse power-hour; and

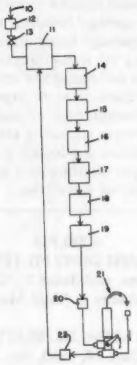
(f) inducing by rotating the propellers of said aerators said closed overall flow pattern at an average linear velocity in a generally horizontal direction through a cross section to flow at least 0.25 feet per second, said angle of inclination of each aerator being sufficient to accomplish the injection rate of step (e) and the average linear velocity of step (f).

4,280,912

WATER PURIFICATION UNIT AND METHOD

W. James Berry, III, Washington, D.C., and William J. Berry, Durham, N.C., assignors to Darco Water Systems, Inc., Durham, N.C.

Continuation of Ser. No. 907,926, May 22, 1978, abandoned.
This application Nov. 5, 1979, Ser. No. 91,452
Int. Cl.³ C02F *1/32, 1/42*
U.S. Cl. 210—662 **4 Claims**



1. Apparatus for purifying water comprising: a water supply, a pump means in communication with said water supply for directing water to successive elements of a purifying circuit including a monitoring means, a carbonaceous resin means, a first ion-exchange means, an ultraviolet light means, a temperature control means, said temperature control means communicating with said ultraviolet light means, said temperature control means including cooling elements for lowering the temperature of the water received from said ultraviolet light means, a second ion-exchange means for receiving the water passing from said temperature control means, an outlet means, said outlet means including a filter means and a quick disconnect coupling unit, a water return means including a conduit from said outlet means to said pump means, said water return means including a spigot means having recirculating ability comprising; an inlet means for maintaining fluid communication with a fluid supply, an adjustable valve means for directing fluid entering said inlet means through either first or second outlet means, said first outlet means including a pre-filtering means, an outlet tip joined to said pre-filtering means for providing fluid therefrom, coupling means engageable with said outlet tip, said coupling means communicating with said second outlet means whereby said fluid passing through said outlet tip with said coupling means engaged is returned to the fluid supply.

4,280,913

WATER PURIFICATION PROCESS

Charles S. Applegate, Brookfield, and Paul R. Erickson, Glendale, both of Wis., assignors to Envirex, Inc., Waukesha, Wis.

Filed Jan. 23, 1980, Ser. No. 114,764
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—669 **26 Claims**

1. A process for removing colloidal and soluble contaminants from impure water, comprising:

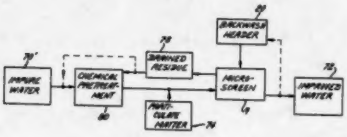
providing a hollow cylindrical microscreen capable of maintaining its integrity when exposed to a positive water head pressure, said microscreen having pores substantially all from one to 30 microns in diameter, said microscreen mounted rotatably about its longitudinal axis on a hollow cylindrical frame complementary to said microscreen, said frame open at one end and closed at its opposite end; whereby a stream of said impure water entering the cylin-

drical space within said microscreen through said open end of said frame can only exit said cylindrical space by passing through said microscreen, while at least some of said contaminants will not be able to pass through said microscreen and will settle on the inner surface thereof,

moving said impure water through said microscreen to provide improved water by introducing a stream of said impure water into said cylindrical space within said microscreen through said open end of said frame at a positive water head pressure,

dispersing discrete, insoluble finely divided particulate matter having a diameter between 1 to 100 microns into said impure water, before said impure water passes through said microscreen leaving said contaminants and particulate matter on said inner surface of said microscreen,

removing said contaminants and particulate matter from said inner surface of said microscreen by passing backwash water through said microscreen from the outer surface thereof at a height above said stream of impure water moving through said microscreen,



collecting and draining said backwash water, removed contaminants and particulate matter extending out of said cylindrical space through said open end of said frame, and

rotating said microscreen about its longitudinal axis at a rate predetermined to form during each rotation of said microscreen, as the result of said impure water passing through said microscreen, an intermixed layer of said contaminants and particulate matter over substantially the entire inner surface of said microscreen through which said stream of impure water is passing, thereby forming a filter substantially impermeable to any of said contaminants and particulate matter of a size able to pass through said pores of said microscreen, while maintaining said microscreen permeable to water, whereby said water pressure head and microscreen pore size will allow said impure water to pass through said microscreen at commercially useful flow rates, while said contaminants and particulate matter having sizes less than a pore of said microscreen are prevented from passing through said microscreen by said filtering layer of said contaminants and particulate matter.

4,280,914

PROCESS FOR AUTOMATICALLY CONTROLLING THE DETOXIFICATION OF WASTE WATERS CONTAINING NITRITE IONS

Helmut Knorre, Seligenstadt, and Joachim Fischer, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,040

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1978, 2852475

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—743 **13 Claims**

1. In a process for the detoxification of nitrite ion containing waste water by oxidizing the nitrite ions to nitrate ions in the weakly acid pH range by means of hydrogen peroxide the improvement comprising automatically controlling the detoxification by successively measuring the pH and stopping the addition of hydrogen peroxide when there is no longer a reduction in the pH upon the addition of more hydrogen peroxide.

4,280,915

SALT STABLE LUBRICANT FOR WATER BASE DRILLING FLUIDS

James D. Kercheville, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Jun. 23, 1977, Ser. No. 809,369

Int. Cl.³ C09K *7/00*

U.S. Cl. 252—8.5 C **15 Claims**

1. A water base drilling fluid having enhanced lubricating properties in the presence of polyvalent cation, comprising a mixture of water clay, and a lubricant mixture consisting essentially of:

about 1–10 wt. % of an alkanol amide of a saturated fatty acid reaction product of an amine selected from the group consisting of mono- and di-substituted amines having C_1–C_{10} range mono- and di-alkanol substituents, and mixtures thereof, and a reactant selected from the group consisting of C_8–C_{20} range saturated fatty acids, triglycerides of C_8–C_{20} range fatty acids wherein at least 50% of the fatty acids are saturated, and mixtures thereof;

about 60–99 wt. % of an alkanol amine of an unsaturated fatty acid reaction product of about 8–13 wt. % amine selected from the group consisting of mono- and di-substituted amines having C_1–C_{10} range mono- and di-alkanol substituents, and mixtures thereof, and about 92 to 87 wt. % of a reactant selected from the group consisting of C_{16}–C_{18} range unsaturated fatty acids, triglycerides of C_{16}–C_{18} unsaturated fatty acids, and mixtures thereof; and

about 0–30 wt. % of a pour point depressant selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, n-butanol, isobutanol, ethylene glycol, butylene glycol, propylene glycol, and mixtures thereof; wherein the alkanol amine radical concentration is in the range of about 5–15 wt. % of said lubricant mixture.

4,280,916

LUBRICANT COMPOSITION

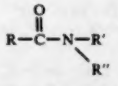
Harry F. Richards, Missouri City, and Douglas C. Carlson, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 31, 1980, Ser. No. 135,819

Int. Cl.³ C10M *1/32, 1/40, 1/48*

U.S. Cl. 252—33.4 **10 Claims**

1. In a motor oil composition formulated for use as a crankcase lubricant in internal combustion engines, said oil containing an ashless dispersant, and an oil-soluble detergent sulfonate and/or phenate the improvement comprising including an effective amount of at least one C_8–C_{24} aliphatic monocarboxylic acid amide sufficient to reduce fuel consumption of an internal combustion engine when employing said motor oil compositions as the crankcase lubricating oil of said engine, said aliphatic monocarboxylic acid amide having the general formula:



wherein R is an alkyl or alkenyl hydrocarbyl radical of 8 to 24 carbon atoms, and R′ and R″, which may be the same or different, are hydrogen or lower alkyl radical having up to 7 carbon atoms.

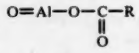
4,280,917

GREASE COMPOSITIONS AND OXYALUMINUM ACYLATE INTERMEDIATE COMPOSITIONS USEFUL IN THE PREPARATION THEREOF

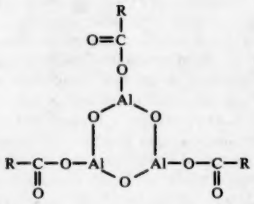
Charles E. Pratt, Signal Mountain, Tenn., assignor to Chattem, Inc., Chattanooga, Tenn.

Filed Nov. 23, 1979, Ser. No. 96,933
Int. Cl.[3] C10M *5/12, 7/16, 1/20*
U.S. Cl. 252—37.7 26 Claims

1. Compounds of the formula



and of the formula



wherein R is selected from the group of radicals consisting of:

Type (A): aliphatic radicals each containing from 10 to 38 carbon atoms, and

Type (B): aromatic radicals each containing from 6 to 16 carbon atoms, and

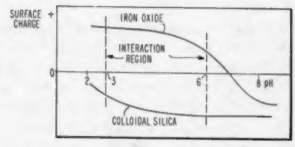
wherein, in any given group of such compounds, or mixtures of such group, the ratio of the number of radicals of said type (B) to said type (A) ranges from 2:3 to 3:1.

4,280,918

MAGNETIC PARTICLE DISPERSIONS

Andrew M. Homola, and Sondra L. Rice, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,763
Int. Cl.[3] B01J *13/00*
U.S. Cl. 252—62.51 7 Claims



1. A method of manufacturing a magnetic dispersion containing magnetic particles, comprising the steps of:

leaching the dry magnetic particles in an acid to form a slurry;

adjusting the pH of the said slurry to between 3 and 6 to produce a positive electrostatic charge on said magnetic particles;

adding to said slurry a dispersion of colloidal particles having a pH between 3 and 6, the colloidal particles having a negative electrostatic charge thereon; and

mixing said slurry with said dispersion, the opposite charges on said particles causing the colloidal particles to be attracted to and irreversibly bond to the magnetic particles.

4,280,919

DETERGENTS AND CLEANSERS CONTAINING OXYALKYLATED ALCOHOLS AS BIODEGRADABLE, LOW-FOAM SURFACTANTS

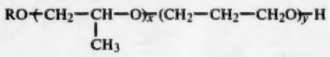
Dieter Stoeckigt; Dieter Kiessling, both of Ludwigshafen; Johannes Perner, Neustadt; Wolfgang Trieselt, Ludwigshafen, and Horst Trapp, Plankstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 29, 1980, Ser. No. 144,948
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918826
Int. Cl.[3] C11D *1/722, 3/075, 3/10, 3/37*
U.S. Cl. 252—135 5 Claims

1. A dishwashing detergent composition which comprises:

10–99.5% by weight based on the total formulation, of builders selected from the group consisting of phosphates, polyacrylic acid, polymaleic acid, maleic acid/vinyl ether copolymers, nitrilotriacetic acid and zeolites, and

0.5–10% by weight of an alkoxylated alcohol of the formula:



wherein R is C_8–C_{18}-alkyl, x is from 2 to 4.5, and y is from 2 to 5.

4,280,920

STABILIZED ALUMINOSILICATE SLURRIES

Michael J. Garvey, Wirral, and Ian C. Griffiths, Liverpool, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,498
Claims priority, application United Kingdom, Mar. 2, 1978, 8373/78
Int. Cl.[3] C11D *1/66, 7/02*
U.S. Cl. 252—173 12 Claims

1. A substantially stable aqueous suspension of a sodium aluminosilicate ion-exchange material which comprises from about 35% to about 50% of the sodium aluminosilicate (anhydrous basis) from about 0.5% to about 10% of a water-soluble nonionic detergent active compound having a cloud point in excess of about 55° C. as determined in accordance with DIN 53917 and from about 0.2% to about 15% of a compatible water-soluble salt, all percentages being by weight of the aqueous suspension, said suspension having a maximum viscosity of less than about 50 poise at a low shear rate.

4,280,921

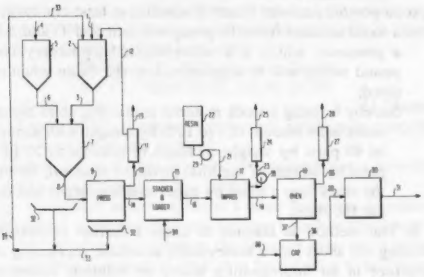
IMMOBILIZATION OF WASTE MATERIAL

John R. May, Newport News, Va., assignor to Newport News Industrial Corporation, Newport News, Va.

Filed Dec. 1, 1978, Ser. No. 965,726
Int. Cl.[3] G21F *9/34*
U.S. Cl. 252—301.1 W 22 Claims

1. A method for immobilizing and solidifying and reducing the volume of hazardous waste material which comprises blending substantially anhydrous powdered waste material with powdered metal, and subjecting the admixture to a pressure of at least 10 tons/in^2 for sufficient time to provide a

strong solid of reduced volume and wherein the amount of said powdered metal is up to about 20% by weight based on the



weight of solid waste material and is at least sufficient to immobilize and solidify said waste when subjected to said pressure.

4,280,922

METHOD AND APPARATUS FOR EMBEDDING RADIOACTIVE PULVERULENT ORGANIC WASTE IN A THERMOPLASTIC MASS

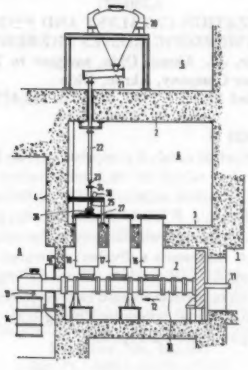
Anwer Puthawala, Buckenhof; Othmar Meichsner, Raunheim, and Erich Marr, Walldorf, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,228

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2810089

Int. Cl.³ G21F *9/34*

U.S. Cl. 252—301.1 W **11 Claims**



1. Method of embedding dry radioactive, pulverulent wastes containing an organic substance in a thermoplastic mass in a kneader of the pass through type said kneader having a plurality of degassing domes disposed along its length in which the thermoplastic mass is introduced through an inlet near one end of the kneader and is delivered through a discharge opening near the other end of the kneader into a container capable of providing a final storage therefor, while gases and/or vapors are withdrawn from the degassing domes of the kneader, further including the combination therewith of delivering fluidic dried wastes to the kneader through a metering tube subjected to mechanical movement to facilitate passage of the wastes, said metering tube extending into the degassing dome in the kneader disposed next to the discharge opening, and admitting scavenging gas into the metering tube at least temporarily in direction toward the kneader.

4,280,923

METHOD FOR FRACTIONATING SOLUBLE POLYMERS AND COLLOIDAL PARTICLES

Hamish Small, and Jitka K. Solc, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 18, 1978, Ser. No. 970,493

Int. Cl.³ B01D *17/00*

U.S. Cl. 252—323 **7 Claims**

1. A liquid chromatographic method for separating different particle size fractions of a suspended colloidal particle system and different molecular weight fractions of a dissolved polymer system, which method comprises passing a polar solvent dispersion containing at least one of said systems through a bed of essentially nonswellable inert granules of a water-insoluble inorganic solid having a chemically bonded surface coating of about 0.01–10 percent by weight of a hydrophilic polymer which is (a) a polymerized alpha-olefin having a functional group substituent selected from the group consisting of carboxyl, carboxy ester, amino, quaternary ammonium, amido, and sulfonate or (b) a water-soluble or methanol-soluble polyethylene glycol, polypropylene glycol or mixed ethylene-propylene polyglycol, said coating swellable by said polar solvent.

5. A liquid chromatographic method for separating different particle size fractions of a suspended colloidal particle system and different molecular weight fractions of a dissolved polymer system, which method comprises passing a polar solvent dispersion containing at least one of said systems through a bed of essentially nonswellable inert granules of a nonporous crosslinked organic polymer gel having a chemically bonded surface coating of about 0.01–10 percent by weight of a hydrophilic polymer which is a water-soluble or methanol-soluble polyethylene glycol, polypropylene glycol, or mixed ethylene-propylene polyglycol.

4,280,924

REGENERATING PEROSMATE CATALYST

Ching-Yong Wu, O'Hara Township, Allegheny County, and Thaddeus P. Kobylinski, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 972,929, Dec. 26, 1978, Pat. No. 4,217,291. This application Dec. 28, 1979, Ser. No. 107,867

The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Int. Cl.³ B01J *31/40, 23/96;* **C07C** *29/03, 27/16*

U.S. Cl. 252—416 **11 Claims**

1. A cyclic process for the regeneration of a perosmate catalyst which comprises the steps

(a) contacting ethylene or propylene at an elevated pressure in a hydroxylation reactor with a reaction mixture comprising a secondary or tertiary organic hydroperoxide in the presence of a catalytic amount of cesium perosmate, rubidium perosmate, potassium perosmate or tetra(lower-)alkylammonium perosmate, an organic polar solvent and an aqueous solution containing cesium hydroxide, rubidium hydroxide, potassium hydroxide or a tetra(lower)alkylammonium hydroxide at a moderate temperature until said hydroperoxide is substantially exhausted whereby a portion of said osmium is reduced to a valence state less than +5,

(b) recovering an osmium-containing catalyst residue from the product mixture,

(c) oxidizing that portion of the osmium in the catalyst residue which is at a valence state less than +5 to a valence state greater than +5 by contacting the osmium catalyst residue with a secondary or tertiary organic hydroperoxide at a temperature less than about 30° C. and at a pH greater than 7, and

(d) recycling the regenerated perosmate catalyst to the hydroxylation reactor.

4. A cyclic process for the regeneration of a perosmate catalyst in accordance with claim 1 in which the said osmium catalyst residue is at a pH of at least about 10.

5. A cyclic process for the regeneration of a perosmate

catalyst in accordance with claim 1 in which the said osmium catalyst residue is contacted with said hydroperoxide at a temperature between about −10° C. and about 25° C.

4,280,925

FILTER FOR SORPTION OF HEAVY METALS

John E. Kiefer, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,473
Int. Cl.³ C02F 1/42
U.S. Cl. 252—428 22 Claims

1. The method of making a sorbent for heavy metals comprising:

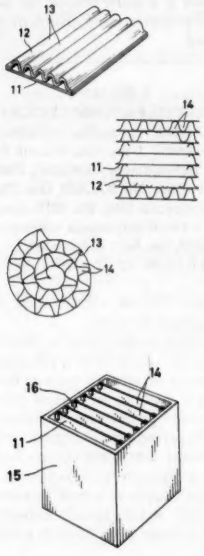
incorporating in a hydrophilic material a zinc sulfide having a high surface area of at least about 15 m^2/g, said hydrophilic material being formed from a cellulose ester selected from cellulose acetate, cellulose butyrate, cellulose propionate or mixed esters thereof.

4,280,926

METHOD FOR PRODUCING A CATALYST AND A CARRIER THEREFOR

Kazunobu Abe, Izumi, and Tadao Nakatsuji, Matsubara, both of Japan, assignors to Sakai Chemical Industry Co., Ltd., Japan

Filed Sep. 5, 1979, Ser. No. 72,599
Claims priority, application Japan, Sep. 12, 1978, 53-112558; Jan. 9, 1979, 54-1694; Apr. 27, 1979, 54-53186
Int. Cl.³ B01J 35/04, 31/28, 21/14, 21/12
U.S. Cl. 252—430 6 Claims



1. A method for producing a catalytic material for the reduction of nitrogen oxides in the presence of ammonia, which consists essentially of admixing:

(a) a slurry prepared by beating at least one of inorganic heat-resistant fibers of about 1–20 mm in fiber length and of about 0.1–30 microns in diameter selected from the group consisting of asbestos fiber, silica fiber, silica-alumina fiber, chrysotile fiber, rock wool, glass fiber, anthophyllite fiber, potassium titanate fiber, carbon fiber and ceramic fiber, in water,

(b) at least one powdery catalytic material having a particle size of about 0.01 to 50 microns and being an oxide selected from the group consisting of Cu, Fe, V, W and Mo or precursor thereof which is a water-insoluble, powdery compound which will be converted into catalytic material when calcined and,

(c) a powdery carrier material which is at least one oxide of a metal selected from the group consisting of Ti and Al or a precursor which is a water-insoluble, powdery compound which will be converted into the oxide when calcined,

thereby forming a stock material containing solid components in an amount of 1 to 10% by weight with about 80 to 40 parts by weight of fibers in relation to 20 to 60 parts by weight of the total powdery material, forming the stock into a sheet by paper-making means and drying the sheet.

3. The method as claimed in claim 1 further comprising: forming the sheet into a honeycomb structure; immersing the structure in an impregnating slurry or solution containing catalytically active agents, carrier materials, their precursors or a mixture of at least two of these; and drying the structure.

4. The method as claimed in claims 2 or 3, wherein the impregnating slurry or solution further contains 1–10 parts by weight of at least one inorganic heat-resistant fiber of about 0.1–30 microns in diameter and about 0.5–5 mm in fiber length selected from the group consisting of asbestos fiber, ceramic fiber, silica fiber, silica-alumina fiber, chrysotile fiber, rock wool, glass fiber, potassium titanate fiber, anthophyllite fiber and carbon fiber, or about 0.5–5 parts of weight of polytetrafluoroethylene fiber, in relation to 100 parts by weight of the total weight of catalytically active agents, carrier materials and their precursors.

4,280,927

POLYMERIZATION CATALYST AND PROCESS FOR POLYMERIZING DIENES THEREWITH

Delmar F. Lohr, Jr., Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 27, 1980, Ser. No. 153,477
Int. Cl.³ C08F 4/48
U.S. Cl. 252—431 N 10 Claims

1. A polymerization catalyst comprising (a) an R″Li organometal compound in which R″ is a monovalent hydrocarbyl radical of 1 to 20 carbon atoms, and (b) an aminoacetal compound of the formula $R'_2N\text{-}A\text{-}CH(OR)_2$ wherein R and R′ each represents a saturated aliphatic hydrocarbyl group of 1–3 carbon atoms; A represents a divalent saturated aliphatic hydrocarbon group of 1–10 carbon atoms having 1–3 carbon atoms in direct linkage between said two valencies, the proportion of said amino-acetal compound being 0.25–10 moles per mole of said organo-metal compound.

4,280,928

CATALYST COMPOSITIONS AND THEIR USE FOR THE PREPARATION OF METHACROLEIN

Lawrence S. Kirch, Huntingdon Valley, and William J. Kennelly, Newtown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 12, 1979, Ser. No. 84,254
Int. Cl.³ B01J 21/02, 23/28, 27/14, 23/02
U.S. Cl. 252—432 9 Claims

1. A catalyst having the formula $Mo_aP_bFe_c—Co_dNi_eBi_f$. $Te_gSb_hCs_iZr_jX_kO_x$ wherein when a is 12; b is 2; c is 1–7; d is 3–7; e is 1–5; f is 1; g is 0.7–1.4; h is 0–1; i is 0.5; j is 0–1.75; k is 0–1; x is a value determined according to the state of oxidation, and X is one or more elements selected from Cu, B or Al.

4,280,929

ATTRITION RESISTANT-HIGHER ACTIVE COMPONENT FLUID BED CATALYSTS

Wilfrid G. Shaw, Lyndhurst; Christos Paparizos, Cleveland, and James L. Callahan, Wooster, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Sep. 17, 1979, Ser. No. 76,115
Int. Cl.[3] B01J *21/08, 23/16, 27/00*
U.S. Cl. 252—439 11 Claims

1. A process for preparing a supported solid oxide complex catalyst comprising the steps of:

(a) adding fumed silica to a mixture containing one or more active components of the catalyst;

(b) drying said mixture to form a dried first-stage mixture;

(c) adding in solution a member having a surface area greater than 50 m^2/g selected from the group of silica and a silica-containing compound other than fumed silica to said dried mixture of (b);

(d) drying and calcining said mixture of (c).

4. The process of claim 1 wherein the active components of step (a) are selected from the group consisting of oxides or reagents that form the oxide of molybdenum, bismuth-molybdenum, antimony-molybdenum and tellurium-molybdenum.

8. A process for preparing a supported solid oxide complex catalyst comprising the steps of:

(a) adding fumed silica to a mixture containing one or more active components of the catalyst;

(b) drying and calcining said mixture to form a cal-cined first-stage mixture;

(c) adding in solution a member having a surface area greater than 50 m^2/g selected from the group of silica and a silica-containing compound other than fumed silica to said dried mixture of (b);

(d) drying and calcining said mixture of (c).

4,280,930

NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 17,303, Mar. 5, 1979, Pat. No. 4,216,346, which is a continuation-in-part of Ser. No. 892,369, Mar. 31, 1978, Pat. No. 4,179,406, which is a division of Ser. No. 744,061, Nov. 22, 1976, Pat. No. 4,115,252. This application Mar. 31, 1980, Ser. No. 135,585
Int. Cl.[3] B01J *23/58, 23/60*
U.S. Cl. 252—466 B 13 Claims

1. A nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.1 to about 5 wt. % alkali metal or alkaline earth metal, and about 0.01 to about 5 wt. % zinc, wherein the platinum group, catalytically available cobalt, zinc and alkali or alkaline earth components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group conponent is present in the elemental metallic state; wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon dehydrogenation conditions or in a mixture of these states; and wherein substantially all of the alkali or alkaline earth component is present in a positive oxidation state.

4,280,931

METHOD AND COMPOSITION FOR ELECTRICALLY RESISTIVE MATERIAL FOR TELEVISION CATHODE RAY TUBES

Dale Deising, Skokie, and Mark Fogelson, Wilmette, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 14, 1979, Ser. No. 66,356
Int. Cl.[3] H01B *1/08;* H01C *7/00*
U.S. Cl. 252—518 15 Claims

1. For use in a television cathode ray tube including a funnel with a conductive coating on the inner surface thereof and a neck enclosing an electron gun having snubber springs extending from an anode electrode, an improved electrically resistive arc-suppressive material to be deposited in an area between said conductive coating and said gun and in contact with said snubber springs, said improved resistive material comprising tin oxide (SnO_2) doped with an antimony compound and calcined in a semi-sealed crucible for about two hours at a temperature in the range of 1306° C. to 1326° C., and blended with glass frit in a weight-percent ratio range of 45–55, said doping, and said temperature range and duration being effective to imbue said material, with a hardness resistant to plowing by said snubber springs and an electrical resistance value effective to suppress said arcing.

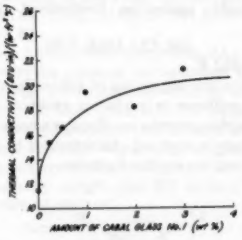
4. For use in the manufacture of a television cathode ray tube including a funnel with a conductive coating on the inner surface thereof and a neck enclosing an electron gun having snubber springs extending from an anode electrode, a method for compounding an improved electrically resistive material comprising the doping of tin oxide (SnO_2) with an antimony compound, calcining the resultant in a semi-sealed crucible at a temperature in the range of 1306° C. to 1326° C. for about two hours, and blending with glass frit in the weight-percent ratio range of 45–55, said doping, and said temperature range and duration being effective to imbue said material with a hardness resistant to plowing by said snubber springs, and an electrical resistance value effective to suppress said arcing.

4,280,932

MAGNESIA INSULATED HEATING ELEMENTS

Marcus P. Borom, Schenectady, N.Y., and John Schultz, Jr., Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 11,068, Feb. 12, 1979, Pat. No. 4,234,786. This application May 22, 1980, Ser. No. 152,369
Int. Cl.[3] C03C *3/14, 35/04;* H02C *1/03*
U.S. Cl. 252—521 3 Claims



1. An electrically insulating filler showing improved thermal conductance without significantly affecting electrical leakage and having special utility as a thermally-conducting and electrically-insulating filler for sheathed electric-resistance heaters consisting essentially of a uniform mixture of granular fused magnesia and from about 0.1% to about 10% of a glass having resistivity greater than about 10^7 ohm-cm at 600° C. and additionally having a glass transition temperature range below about 700° C. and being thermodynamically stable in the presence of oxygen partial pressure of 10^{-15} atmosphere in the temperature range of 750° to 1100° C. wherein the glass con-

sists essentially of from about 10 to about 50 mol percent CaO, from about 30 to about 90 mol percent B_2O_3, and from about 0 to about 30 mol percent Al_2O_3, said filler being substantially free of electrically conductive metal materials, alkalis and/or easily reducible metal oxides.

4,280,933

DERIVATIVES OF CIS-3-HEXENOL AND PROCESS FOR PRODUCING COMPOSITIONS OF MATTER CONTAINING CIS-3-HEXENAL AND PRODUCTS PRODUCED THEREBY AND ORGANOLEPTIC USES THEREOF

Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Edward J. Granda, Englishtown; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 85,707, Oct. 17, 1979, Pat. No. 4,241,098. This application Jul. 17, 1980, Ser. No. 169,902

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume composition or a cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of a mixture of cis-3-hexenal, trans-2-hexenal, cis-3-hexenyl formate, cis-3-hexenol and cis-3-hexenyl-cis-2-hexenoate, prepared by reacting cis-3-hexenol with pyridine chlorochromate, the mole ratio of cis-3-hexenol:pyridine chlorochromate initially in the reaction mass being in the range of from 1:0.5 up to 1:2, the reaction being carried out in a solvent, whereby said mixture is stable with respect to the aroma substantivity of the cis-3-hexenal.

4,280,934

CYCLOPENTANE DERIVATIVES USEFUL AS PERFUMING AGENTS

Karl-Heinrich Schulte-Elte, Onex, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

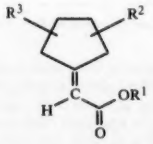
Continuation of Ser. No. 808,688, Jun. 21, 1977, abandoned. This application Feb. 17, 1979, Ser. No. 104,404

Claims priority, application Switzerland, Jun. 30, 1976, 8343/76

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **7 Claims**

1. The method for improving or enhancing the odoriferous properties of perfumes or perfumed products which consists essentially of adding thereto an effective amount of at least one substantially pure compound characterized by fruity or flowery fragrance and having the formula



(I)

wherein the symbol R^1 represents a linear, branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms and wherein each of the symbols R^2 and R^3 are the same or different and represents a hydrogen atom or a lower alkyl radical.

4,280,935

FRICTION MATERIAL COMPRISING AN IRON POWDER HAVING A CARBON CONTENT OF FROM 0.5–1 PERCENT

Osao Ogiwara, Hanyu, Japan, assignor to Akebono Brake Industry Company, Ltd., Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,765

Claims priority, application Japan, May 28, 1979, 54-65752; May 28, 1979, 54-65753

Int. Cl.³ F16D *69/02;* **C08L** *61/04*

U.S. Cl. 260—3 **5 Claims**

1. A friction material wherein a mixture consisting of 20–60 wt.% of a high carbon iron powder having a carbon content of 0.5 to 1.0 wt.%, 0–20 wt.% of an organic friction modifier, 10–40 wt.% of a lubricant, 0–10 wt.% of a metallic powder, 5–30 wt.% of a fiber reinforcing material, 5–15 wt.% of a thermosetting resin and 0.5 to 10.5 wt.% of a flame retarding material is formed by heating under pressure.

4,280,936

DENTURE ADHESIVE OF SODIUM CARBOXYMETHYLCELLULOSE, POLY(ETHYLENE OXIDE) HOMOPOLYMER AND MINERAL OIL

Dadi J. Dhabhar; Allen Heyd, both of Norwalk, and Nicholas F. Schmidt, Brookfield, all of Conn., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 17, 1980, Ser. No. 140,462

Int. Cl.³ C08L *1/26*

U.S. Cl. 260—13 **3 Claims**

1. An anhydrous denture adhesive liquid composition consisting essentially of sodium carboxymethylcellulose, poly-(ethylene oxide) homopolymer and mineral oil wherein the sodium carboxymethylcellulose and poly(ethylene oxide) homopolymer are present in a weight ratio of about 3:1 and together comprise about 45 weight percent of the total composition.

4,280,937

GRAFT POLYMERS OF POLYSACCHARIDE ESTERS

Herbert Bartl, Odenthal, and Fritz Mietzsch, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,843

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842540

Int. Cl.³ C08L *1/10, 1/14, 3/16*

U.S. Cl. 260—17 A **8 Claims**

1. A graft copolymer comprising

(A) 2 to 30% by weight of a polysaccharide ester as grafting substrate and

(B) 98 to 70% by weight of a mixture of

(1) 8 to 90% by weight of ethylene and

(2) 92 to 10% by weight of vinyl acetate as grafting monomers.

4,280,938

HIGH SOLIDS AIR-DRYING COATING COMPOSITIONS

William F. Strazik; John R. LeBlanc, both of Wilbraham, and J. Owen Santer, East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1979, Ser. No. 105,058

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—21 **25 Claims**

1. An air-drying composition comprising from about 50 to about 90 parts by weight of an unsaturated oil-modified resin and from about 50 to about 10 parts by weight of an unsaturated stepwise condensate of an alkoxymethylmelamine, an allylic alcohol, and an acrylamide, wherein the ratio of allylic alcohol moieties to acrylamide moieties in the condensate is in the range of about 3:1 to about 1:3, wherein the condensate contains at least about 0.75 allylic moiety and no more than about 3 acrylamide moieties per melamine ring and wherein

the total of allylic moieties and acrylamide moieties of the condensate is in the range of about 2 to about 4 per melamine ring.

4,280,939

THERMOPLASTIC INK COMPOSITION FOR DECORATING GLASS, GLASS-CERAMIC, AND CERAMIC WARE

Ronald E. Johnson, Tioga, Pa., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,907

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—23 AR **12 Claims**

1. A thermoplastic ink suitable for decorating glass, glass-ceramic, and ceramic articles exhibiting pressure sensitivity at temperatures substantially below its Ring and Ball softening point prepared from a formulation consisting essentially, in weight percent, of:

(a) about 50–80% of a vitrifiable, inorganic flux containing up to about 30% by weight inorganic pigments and opacifiers;

(b) about 2–20% of an ethylene-ester copolymer resin having about 8–40% by weight of a copolymerized ester selected from the group consisting of vinyl alcohol esters of C_1–C_4 saturated monocarboxylic acids and C_1–C_5 saturated alcohol esters of acrylic or methacrylic acid, the molecular weight of the polymer being such as to yield a melt index, as defined by ASTM D1238, of about 20–400 g/10 minutes;

(c) about 4–20% of an amorphous tackifying resin having a Ring and Ball softening point of about 40°–110° C.;

(d) 0–10% of a modifying polyolefin resin selected from the group consisting of a low molecular weight polyethylene resin with a melt index, as defined by ASTM D1238, greater than about 20 g/10 minutes and an amorphous polypropylene resin having a melt viscosity of about 500–15,000 cps at 375° F. (~ 191° C.); and

(e) about 5–25% of an organic wax and/or plasticizer compatible with the resins of paragraphs (b), (c), and (d) and having a Ring and Ball softening point of less than about 100° C.

6. A thermoplastic ink according to claim 1 wherein said organic wax is selected from the group of paraffin and microcrystalline mineral waxes, animal waxes, vegetable waxes, fatty alcohols, fatty acids, fatty acid esters, glycerides, oxazoline waxes, and hydrogenated vegetable oils.

4,280,940

THERMOPLASTIC COMPOSITION COMPRISING VINYL CHLORIDE POLYMER AND TWO CHLORINATED POLYETHYLENES

Helmut Klug, Aystetten, and Hans-Helmut Frey, Bad Soden am Tanus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,463

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937178

Int. Cl.³ C08L *23/28, 27/06*

U.S. Cl. 260—23 XA **6 Claims**

1. Thermoplastic composition consisting essentially of

(A) 95–80% by weight of vinyl chloride polymer and

(B) 5–20% by weight of chlorinated polyethylenes, each time calculated on the thermoplastic composition, wherein component

(A) is a vinyl chloride polymer with a K value of from 55–65, and component B is a mixture of

(B_1) 2.5–15 parts by weight of a chlorinated low pressure polyethylene, having a chlorine content of from 37–42% by weight, a residue value of from 0–30% (measured by extraction with toluene/acetone 1:1) and a swelling value of from 10–70% (measured in methyl cyclohexane) and which has been prepared by chlorination of a low pressure polyethylene of a density of from 0.940–0.955 g/cm³ and a melt flow index MFI 190/5 of from 0.1–5 g/10 min in suspension in water or in 10–35% hydrochloric acid in the presence of 0–2% by weight of silicic acid and 0–1% by weight of silicone oil, relative, each time, to the polyethylene used, at temperatures between 50° and 130° C., with at least 10% of chlorine being introduced at temperatures between 120° and 130° C. and

(B_2) 2.5–15 parts by weight of a chlorinated low pressure polyethylene with a chlorine content of from 37–42% by weight, a residue value of 50–70% and a swelling value below 1% and which has been prepared from a low pressure polyethylene with a density between 0.955 and 0.965 g/cm³ and a melt flow index MFI 190/5 of from 20–65 g/10 min by chlorination in suspension in water or in 10–35% hydrochloric acid in the presence of 0–2% by weight of silicic acid and 0–1% by weight of silicone oil, each time calculated on the polyethylene used, at temperatures between 50° and 120° C., while introducing at least the last 10% of chlorine at a temperature of from 110° to 120° C.

4,280,941

VIDEO DISCS AND MOLDING COMPOSITIONS THEREFOR

Pabitra Datta, Cranbury, and Ronald N. Friel, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 59,472, Jul. 20, 1979, abandoned, which is a division of Ser. No. 959,846, Nov. 13, 1978, Pat. No. 4,241,120. This application May 8, 1980, Ser. No. 147,577

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—23 XA **4 Claims**

1. In a conductive molding composition comprising a polyvinyl chloride polymer, a solid mercapto tin stabilizer, an acrylic processing aid, an internal lubricant and a sufficient amount of conductive particles so that the composition has a bulk resistivity below about 500 ohm-cm at 900 MHz, the improvement which comprises employing as said conductive particles polymer grafted carbon particles wherein said polymer is a thermally polymerized polymer of a monomer having vinyl unsaturation, and wherein the ungrafted particles have an apparent bulk density of 150 grams per liter.

4,280,942

AQUEOUS ACRYLIC CONTACT ADHESIVE

Robert W. Green, Loveland, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

Filed Jul. 9, 1980, Ser. No. 167,252

Int. Cl.³ C08L *93/04, 61/10, 33/10*

U.S. Cl. 260—27 R **10 Claims**

1. An adhesive composition comprising (A) 100 parts, by weight, of an acrylate polymer as contained in an aqueous emulsion containing from about 40–65% by weight of said acrylate polymer, (B) from about 0.5–5%, based on the total weight of said acrylate polymer emulsion, of a vinyl alcohol polymer, (C) from about 20–79 parts, by weight, per 100 parts of said acrylate polymer, of a tackifying resin and (D) from about 10–35 parts, by weight, per 100 parts of said acrylate polymer, of a resin plasticizer.

4,280,943

ORGANIC GROUTING COMPOSITION FOR ANCHORING A BOLT IN A HOLE

Joseph R. Bivens, Martinsburg, W. Va.; William M. Lyerly, Hagerstown, Md., and Walter J. Simmons, Martinsburg, W. Va., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Nov. 8, 1979, Ser. No. 92,712

Int. Cl.³ C08L *67/06*

U.S. Cl. 260—29.2 E **15 Claims**

1. In an organic grouting composition comprising

(a) a first component containing a resin formulation comprising an unsaturated polymerizable polyester resin mixed with a monomeric polymerizable ethylenic crosslinking agent therefor, a polymerization inhibitor, and a promoter for a peroxide catalyst,
(b) separated from said first component, a second component containing a peroxide catalyst, and
(c) a particulate solid filler, said polyester and said crosslinking agent, when said first and second components are in a combined and mixed condition around a reinforcing member in a hole, being adapted to react rapidly to form a hardened anchoring composition around the reinforcing member, the improvement comprising the addition of water and a diffusing agent to said first and/or second components, and a particulate solid filler to both said first and second components, the weight ratio of said resin formulation to water being in the range of from 0.3 to 6, said resin formulation constituting about from 5 to 22 percent, said water from 4 to 19 percent, and said solid filler about from 65 to 75 percent of said composition by weight, the weight ratio of said solid filler to said resin formulation being in the range of about from 3 to 15, and any portion of said solid filler which is hydratable being present only in a substantially water-free component.

4,280,944

THERMOSETTING POLYURETHANE RESIN AND COATING AGENT THEREOF PREPARED FROM AT LEAST TWO POLYOXYALKYLENE POLYOLS, BLOCKING AGENT, CHAIN-ELONGATING AGENT, CROSS-LINKING AGENT AND A MIXTURE OF DIISOCYANATES

Takashi Saito; Kiyotsugu Asai, both of Yokohama, and Toshihiko Kawabata, Fujisawa, all of Japan, assignors to Mitsui-Nisso Corporation, Tokyo, Japan

Filed May 16, 1980, Ser. No. 150,684
Claims priority, application Japan, May 17, 1979, 54-59761
Int. Cl.³ C08L *75/04*
U.S. Cl. 260—29.2 TN **14 Claims**

1. A thermosetting polyurethane resin obtained by interacting:
(a) a prepolymer having terminal NCO groups which is obtained by reacting at least one polyoxyalkylene polyol with methylene bis(4-cyclohexylisocyanate) and isophorone diisocyanate and then with a chain-elongating agent,
(b) a monofunctional isocyanate-blocking agent,
(c) a non-ionic surface active agent selected from the group consisting of a polyoxyethylene glycol or a polyoxyethylene-polyoxypropylene glycol, and mixtures thereof, and
(d) a cross-linking agent
wherein said prepolymer is reacted with said monofunctional isocyanate-blocking agent, the total weight percentage of said at least one polyoxyalkylene polyol and said non-ionic surface active agent is 10 to 40% based upon the weight of the nonvolatile matter of the thermosetting polyurethane resin, the weight percentage of said non-ionic surface active agent is 1 to 8% relative to the weight of the non-volatile matter of the thermosetting polyurethane resin, and the molar ratio of the methylene bis(4-cyclohexylisocyanate) and iso-phorone diisocyanate is in the range of from 1:0.3 to 1:1.5.

4,280,945

VINYL CHLORIDE COMPOSITIONS PLASTICIZED WITH META-TERTIARY-BUTYLPHENYL DIPHENYL PHOSPHATE

Stanley B. Mirviss, Stamford, Conn., and Silvio L. Giolito, Whitestone, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 5, 1979, Ser. No. 91,633
Int. Cl.³ C08K *5/49*
U.S. Cl. 260—30.6 R **3 Claims**

1. A plasticized vinyl chloride polymer composition comprising a vinyl chloride polymer and a plasticizingly-effective amount of a tertiary-butylphenyl diphenyl phosphate having a nominal molar ratio of tertiary-butyl radicals to phenyl groups ranging from about 1:5 to about 1:2 and wherein the meta-tertiary-butylphenyl portion of the total tertiary-butylphenyl content ranges from about 25% to about 100% and the ortho-tertiary-butylphenyl content is less than about 50 mole %.

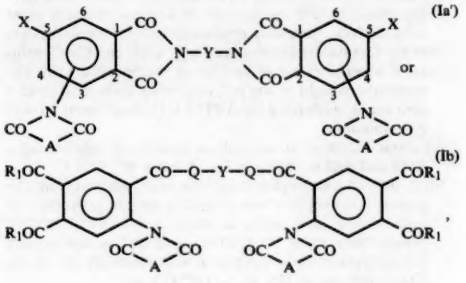
4,280,946

CROSSLINKABLE BIS-IMIDYL DERIVATIVES

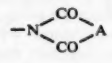
Roland Darms, Therwil; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 940,409, Sep. 7, 1978, Pat. No. 4,219,481, which is a division of Ser. No. 747,443, Dec. 6, 1976, Pat. No. 4,126,619. This application Dec. 3, 1979, Ser. No. 99,952
Claims priority, application Switzerland, Dec. 19, 1975, 16510/75
Int. Cl.³ C07D *209/48, 207/04*
U.S. Cl. 260—326 N **7 Claims**

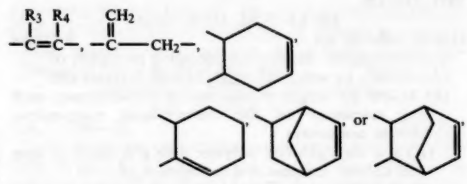
1. A crosslinkable compound of the formula



wherein
the X s independently of one another represent hydrogen or, if the radical



is in the 4-position of the benzene ring, also—COR_2, the R_2 s independently of one another represent hydroxyl, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two or five halogen atoms; alkoxy of 1 to 18 carbon atoms or an O^-M^+ group,
the R_1 s independently of one another have the same meaning as the R_2 s or two adjacent R_1 s together represent the —O— grouping,
the A s independently of one another represent a radical of the formula



R_3 and R_4 independently of one another represent hydrogen, chlorine, bromine or methyl,
M^+ represents an alkali metal cation, a trialkylammonium cation having 3–24 carbon atoms, or a quaternary ammonium cartion,

Q represents —NH—, and
Y represents a structural element of the formula

$$-Z\left[NHCO-Z_1-CONH-Z\right]_a \quad \text{(IIA)}$$

wherein
a represents a number from 1–100,
Z represents alkylene of 2 to 10 carbon atoms, 1,3-phenylene, 1,4-phenylene, the 4,4'-diphenylmethane group, the 4,4'-diphenylsulfone group or the 4,4'-diphenyl ether group, and
Z_1 represents alkylene of 2 to 10 carbon atoms, 1,3-phenylene or 1,4-phenylene.

4,280,947

PAINT CONTAINING SILICONE ELASTOMER

Tokishige Mori, 4-10, Suwa-cho 3-chome, Nakamura-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jul. 20, 1979, Ser. No. 59,154
Claims priority, application Japan, Aug. 8, 1978, 53-97031
Int. Cl.³ C08K *5/01*
U.S. Cl. 260—33.6 SB **3 Claims**

1. A paint containing silicone composition curable to an elastomer comprising:
about 10 parts by volume of liquid or paste silicone composition curable to an elastomer;
about 10 to 30 parts by volume of an organic solvent;
about 3 to 6 parts by volume of a paint film stabilizer;
about 1–10 parts by volume of an oil paint; and a curing agent for said silicone composition;
wherein said paint film stabilizer comprises glass beads.

4,280,948

MODIFIED POLYESTER COMPOSITIONS

Ronald L. Dieck, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 2, 1979, Ser. No. 8,980
Int. Cl.³ C08L *51/04, 67/00*
U.S. Cl. 260—40 R **14 Claims**

1. A thermoplastic composition comprising:
(a) a polyester composition comprising:
(i) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic/aliphatic or aliphatic polyester;
(ii) a blend of (i) and a poly(ethylene terephthalate) resin; or
(iii) a blend of (i) and a poly(1,4-butylene terephtthalate) resin; and
(b) an impact modifier therefor comprising a combination of:
(i) an acrylic or methacrylic monomer grafted polymer of a conjugated diene, alone or in combination with a vinyl monomer; and
(ii) an aromatic polycarbonate resin, said impact modifier (b) being present in an amount of up to 60 parts per 100 parts by weight of (a) and (b) together, the weight ratio of said grafted polymer to said polycarbonate resin being between 1:99 and 99:1.

12. A composition as defined in claim 1 which also includes (c) fibrous glass reinforcing agent in an amount of from about 1 to about 60 parts by weight per 100 parts by weight of (a), (b) and (c) together.

4,280,949

MODIFIED POLYESTER COMPOSITIONS CONTAINING MINERAL FILLER

Ronald L. Dieck, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 12, 1979, Ser. No. 11,681
Int. Cl.³ C08L *69/00, 67/02*
U.S. Cl. 260—40 R **15 Claims**

1. A thermoplastic composition comprising:
(a) a polyester composition comprising:
(i) a poly(1,4-butylene terephthalate) resin;
(ii) a blend of a poly(1,4-butylene terephthalate) resin and a poly(ethylene terephthalate) resin;
(iii) a block copolyester of poly(1,4-butylene terephthalate) and an aromatic/aliphatic or aliphatic polyester;
(iv) a blend of (iii) and a poly(ethylene terephthalate) resin; or
(v) a blend of (iii) and a poly(1,4-butylene terephthalate) resin;
(b) an impact modifier therefor comprising a combination of:
(i) an acrylic or methacrylic monomer grafted polymer of a conjugated diene alone or combined with a vinyl aromatic monomer; and
(ii) an aromatic polycarbonate resin, in an amount of up to 60 parts per 100 parts by weight of (a) and (b) together; and
(c) an effective amount to improve impact strength after annealing and at −20° C. of mineral filler therefor selected from clay, mica, talc or a mixture of any of the foregoing.

4,280,950

MOLDING HAVING GRAIN OF A NATURAL MATERIAL AND METHOD FOR PRODUCING SAME

Yoshiaki Nagata, and Shinya Fukui, both of Osaka, Japan, assignors to Hexa Chemical, Osaka, Japan

Filed Aug. 8, 1979, Ser. No. 64,736
Int. Cl.³ C08L *71/04, 25/06, 23/12*
U.S. Cl. 260—42.21 **5 Claims**

1. A molding having a grain resembling a natural material comprising a mixture of 0.1–20% by weight of colored modified polyphenyleneoxide resin and 80–99.9% by weight of thermoplastic, said thermoplastic resin having a higher fluidity in the range of molding temperature than said polyphenyleneoxide resin and selected from group consisting of styrene resin, polyolefine resin, polyvinylchloride resin and polymethylmethacrylate resin.

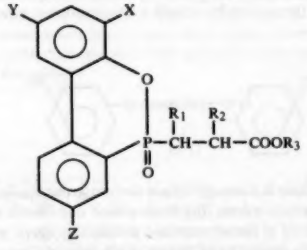
4,280,951

FLAME RETARDANTS

Toranosuke Saito, Kobe, and Hiroyuki Ohishi, Moriyama, both of Japan, assignors to Sanko Kaihatsu Kagaku Kenkyusho, Osaka, Japan

Continuation-in-part of Ser. No. 39,769, May 17, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 162,007
Claims priority, application Japan, May 24, 1978, 53-61047
Int. Cl.³ C08K *5/53;* **C07F** *9/32*
U.S. Cl. 260—45.8 R **6 Claims**

1. A flame retardant comprising phosphorus-containing condensation products of an organophosphorus compound represented by Formula I,

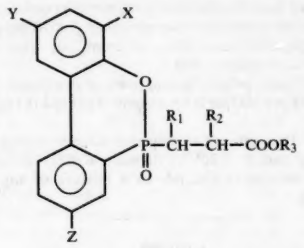


I

wherein X, Y and Z each is hydrogen or halogen, R_1 and R_2 each is hydrogen or methyl and R_3 is hydrogen or an alkyl group with a polyhydric alcohol having at least three alcoholic hydroxyl groups selected from the class consisting of glycerine, polyglycerines, trimethylol ethane, trimethylol propane, pentaerythritol, dipentaerythritol, tripentaerythritol, tetrapen-

taerythritol, mannite and sorbite, where said condensation products have a phosphorus content of 6.0 to 10.7% by weight and a softening point of 55°–155° C.

4. A flame retardant resin composition comprising 100 parts by weight of a thermoplastic resin and 3 to 50 parts by weight of phosphorus-containing condensation products of an organophosphorus compound represented by Formula I,



I

wherein X, Y and Z each is hydrogen or halogen, R_1 and R_2 each is hydrogen or methyl and R_3 is hydrogen or an alkyl group with a polyhydric alcohol having at least three alcoholic hydroxyl groups, where said condensation products have a phosphorus content of 6.0 to 10.7% by weight and a softening point of 55°–155° C.

4,280,952

FLAME RETARDANT POLYSTYRENE PLASTIC COMPOSITIONS

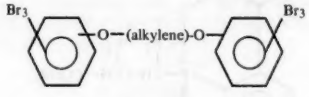
Richard C. Nametz, Manchester, and Paul O. Moore, Ann Arbor, both of Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 924,325, Jul. 14, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,834

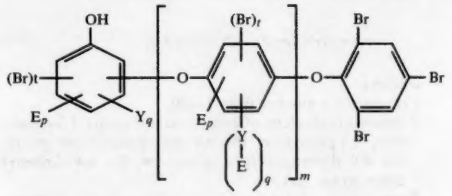
Int. Cl.[3] **C08K** *5/13;* **C08L** *71/04*

U.S. Cl. 260—45.95 G **4 Claims**

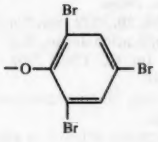
1. A flame retardant plastic composition comprising polystyrene polymer and from about 2 to about 35 weight percent of a flame retardant additive system which contains (i) from about one to about three parts by weight a bis-phenoxy compound of the formula



wherein alkylene is a straight chain carbon group having from one to six carbon atoms; (ii) from about one-fourth part to about 6 parts of a flame retardant enhancing agent selected from the group consisting of oxides and halides of Group IV-A and V-A of the Periodic Table of Elements; and (iii) from about one to about three parts by weight of a poly(brominated phenylene oxide) condensation product derived from tribromphenol, wherein said condensation product is a branched polymer having a hydroxyl number of from 2.8 to about 30 and the structural formula



wherein each repeating unit set out within the brackets of the structural formula is attached in an ortho or para configuration to its adjacent phenyl and phenoxy moiety; and wherein E is an end group of the formula



Y is a side chain of the same structure and configuration as said repeating unit; the substituents Br, E and Y on each phenyl ring are attached only to the ortho or para positions relative the hydroxyl group in the structural formula and the oxygen atom in the repeating unit; each t, p and q are independently the integer 0 or 1, provided that the sum of t plus p plus q equals 2, and provided that from about 10 to about 80 percent of the repeating units have the side chain and end unit —Y—E attached thereto; and m is an integer such that the total molecular weight of the polymer ranges from about 2,000 to about 20,000.

4,280,953

GLYCOSYLATED ANALOGS OF SOMATOSTATIN

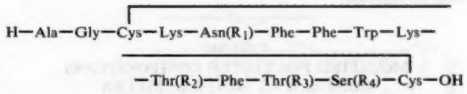
Roger C. L. Guillemin, La Jolla; Solange Lavielle, San Diego; Paul E. Brazeau, Jr., San Diego; Nicholas C. Ling, San Diego, and Robert A. Benoit, San Diego, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Nov. 8, 1979, Ser. No. 92,647

Int. Cl.[3] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 S **5 Claims**

1. A somatostatin peptide having the formula



wherein R_1, R_2, R_3 and R_4 are hydrogen or a carbohydrate moiety selected from the group consisting of hexoses and amino-hexoses modified in the 2-position with an amide group, which hexose has the pyranose structure provided that at least one R group is not hydrogen, and pharmaceutically acceptable nontoxic salts thereof.

4,280,954

CROSSLINKED COLLAGEN-MUCOPOLYSACCHARIDE COMPOSITE MATERIALS

Ioannis V. Yannas, Newtown Center; Philip L. Gordon, Lexington, both of Mass.; Chor Huang, Avon Lake, Ohio; Frederick H. Silver, Danville, N.H., and John F. Burke, Belmont, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 890,427, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 596,111, Jul. 15, 1975, abandoned. This application Apr. 16, 1979, Ser. No. 30,183

Int. Cl.[3] **A23J** *1/10*

U.S. Cl. 260—123.7 **11 Claims**

1. A process for preparing a crosslinked collagen-mucopolysaccharide composite material, comprising:

a. soaking collagen in an aqueous acidic solution having a pH of below about 6;

b. contacting said aqueous acidic solution of collagen with a mucopolysaccharide to produce a collagen-mucopolysaccharide product; and,

c. covalently crosslinking said collagen-mucopolysaccharide product to an M_C value of between about 800 and about 60,000.

4,280,955

SULFO, CHLORO PHENOLAZOACETOACETYLBENZAMIDE DYES

Hans Baumann, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

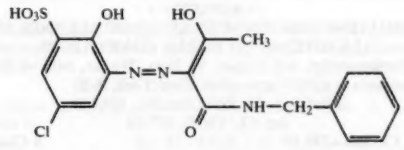
Filed Jun. 11, 1979, Ser. No. 47,246

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825517

Int. Cl.[3] **C09B** *29/33, 45/20;* **D06P** *3/06, 3/24*

U.S. Cl. 260—149 **1 Claim**

1. A 1:2 cobalt complex dye of the formula



or its alkali metal salts or ammonium salts.

4,280,956

PHTHALOCYANINE REACTIVE DYESTUFFS

Kurt Schreiner, Hoenebach; Horst Jäger, and Richard Schwaebel, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

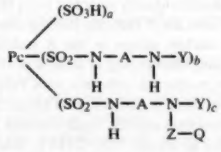
Filed May 29, 1979, Ser. No. 43,050

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828227

Int. Cl.[3] **C09B** *47/04, 47/30*

U.S. Cl. 260—242.2 **6 Claims**

1. Phthalocyanine reactive dyestuffs of the formula



wherein

Pc = the radical of a phthalocyanine,

A = an alkylene radical with at least 2 C atoms,

Z = an alkylene radical,

Y = a reactive group,

Q = a carboxyl, sulfide, sulphate or disulphimide group,

a = 0 − 2,

b = 0 − 2,

c = 1 − 4 and

a + b + c ≦ 4.

4,280,957

IMIDAZODIAZEPINES AND PROCESSES THEREFOR

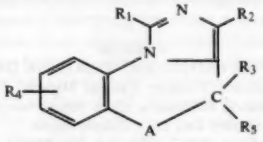
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 663,660, Mar. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application May 15, 1978, Ser. No. 905,820

Int. Cl.[3] **C07D** *487/04*

U.S. Cl. 260—244.4 **5 Claims**

1. A compound of the formula



wherein A is

R_1 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, acyloxy lower alkyl, phenyl, alkoxy lower alkyl, halo lower alkyl, amino lower alkyl, tolyl substituted amino lower alkyl, substitued phenyl, pyridyl, aralkyl and the group

wherein R is hydrogen or lower alkyl and ROOC where R is lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, acyloxy lower alkyl, alkoxy lower alkyl, halo lower alkyl, cyano, cyano lower alkyl, substituted amino lower alkyl, amino lower alkyl, substituted amino, the group COOR where R is hydrogen or lower alkyl, the group

where R is hydrogen or lower alkyl, or derivatives thereof, i.e., the group R–C=N–R′ wherein R′ is hydrogen, lower alkyl, hydroxy, phenyl, alkoxy, amino, mono or dialkylamino and arylamino and R is hydrogen or lower alkyl, the group

(where R, R′ are hydrogen, lower alkyl, aryl, hydroxy lower alkyl, lower alkenyl, or together R and R′ with the nitrogen atom may form a part of a 5 or 6 membered heterocyclic ring and the group $(CH_2)_nNRR'$ where R and R′ are hydrogen, lower alkyl, hydroxy lower alkyl, lower alkenyl, aryl or together R and R′ with the nitrogen may form a part of a 5 or 6 membered heterocyclic ring), the group

where R^{10}, R^{11}, R^{12} are hydrogen or lower alkyl and the group $(CH_2)_nNR^{13}R^{14}$ where n is 1 to 4 and R^{13}, R^{14} are hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen or lower alkyl; R_5 is selected from the group consisting of hydrogen, lower alkanoyloxy and hydroxy; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R_6 is selected from the group consisting of phenyl, mono-substituted phenyl, disubstituted phenyl, pyridyl and mono-substituted pyridyl
and the pharmaceutically acceptable salts thereof.

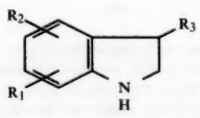
4,280,958

PROCESS FOR PRODUCING INDOLINE DERIVATIVE

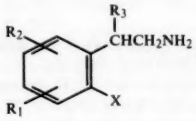
Yoshiki Nakayama, Shimizu; Yasushi Higuchi, Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,487
Claims priority, application Japan, Oct. 31, 1978, 53-134309
Int. Cl.³ C07D *209/08*
U.S. Cl. 260—326.11 R **3 Claims**

1. A process for producing an indoline derivative having the formula



by a cyclization of 2-halogenophenethylamine having the formula



(I)

wherein R_1 represents a hydrogen atom or a lower alkyl, a lower alkoxyl, nitro or hydroxyl group; R_2 represents a hydrogen atom or a lower alkoxyl or nitro group; and R_3 represents a hydrogen atom, a lower alkyl, hydroxy lower alkyl, amino lower alkyl, nitrilo lower alkyl, lower alkoxyl lower alkyl, or lower alkylamino group; and X represents a halogen atom in the presence of a copper type catalyst which supplies copper ions, and an amine selected from the group consisting of (1) compounds having the formula

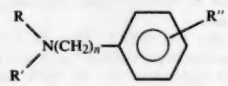
$$R_{3-n}NH_n$$

wherein R represents a C_{1-16} alkyl group or C_{1-8} alkoxy group; n is 0 to 2 and R can be the same or different in the case of n is 1 or 0; (2) compounds having the formula

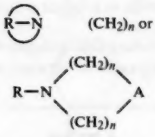
$$H_2N(CH_2)_nNH_2 \text{ and}$$

$$H_2N(CH_2)_nNH(CH_2)_nNH_2$$

wherein n is an integer of 2 to 6; (3) compounds having the formula



wherein R and R′ are the same or different and respectively hydrogen atom, a C_{1-4} alkyl group; n is 0 to 2; and R″ represents a hydrogen atom, a halogen atom, a C_{1-4} alkyl group or a C_{1-4} alkoxy group; and (4) compounds having the formula



wherein R represents a hydrogen atom, a C_{1-4} alkyl group; A represents O or NH; n is 2 to 5.

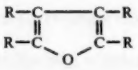
4,280,959

OXIDATIVE DEHYDROGENATION OF ALKENES OR ALKADIENES TO FURAN COMPOUNDS

R. Parthasarathy, and Eugene V. Hort, Wayne, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,451
Int. Cl.³ C07D *307/36*
U.S. Cl. 260—346.11 **4 Claims**

1. A process which comprises reacting at least one usaturated acyclic feed hydrocarbon selected from the group consisting of alkenes and alkadienes having from 4 to 10 carbon atoms, with oxygen in contact with a catalyst composition consisting essentially of silver, phosphorus and oxygen, with the silver-to-phosphorus atom ratio being in the range of 0.25:1 to about 10:1, under suitable vapor-phase reaction conditions for the conversion of said at least one unsaturated acyclic feed hydrocarbon to at least one furan compound having the formula



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms, the total carbon atoms in the R radicals being in the range of 0 to 6; and recovering at least a portion of the furan compounds thus produced, wherein said reaction conditions comprise a temperature in the range of about 200° C. to about 600° C., an unsaturated acyclic hydrocarbon feed rate in the range of about 10 to about 1000 GHSV, and a mol ratio of oxygen to unsaturated acyclic feed hydrocarbon in the range of about 0.1:1 to about 3:1.

4,280,960
PHOSPHONIC ACID ESTERS

Konrad Nonn; Klaus Walz; Karlheinz Wolf, and Günther Boehmke, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

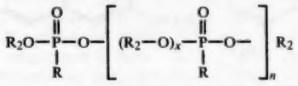
Filed Nov. 23, 1979, Ser. No. 96,725

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853936

Int. Cl.³ C07F *9/40;* C04B *30/02*

U.S. Cl. 260—403 1 Claim

1. Phosphonic acid esters of the general formula



in which

R represents a C_{12}—C_{22}—alkyl or -alkenyl radical, a C_7—C_{18}—aralkyl radical or a radical of the formula —R-4—O—CO—R_5 or —R_4—COO—R_5,

wherein

R_4 denotes an optionally substituted C_2—C_4—alkylene radical and

R_5 denotes a C_6—C_{22}—alkyl or -alkenyl radical or a cycloalkyl radical,

R_1 represents the ethylene and/or 1,2-propylene radical,

R_2 represents hydrogen, C_1—C_4—alkyl or —$(R_1$—$O)_x$-$_1R_1$—R_3,

R_3 represents OH, Cl or Br,

x represents an integer from 4 to 50 and

n represents a number from 1 to 10.

4,280,961
METHOD OF RECOVERING AND/OR REFINING ANIMAL FATS

Fred Schneider, Gümligen, and Wolfgang Sirtl, Zurich, both of Switzerland, assignors to Ernst Haussener, Berne, Switzerland

Filed Jan. 31, 1980, Ser. No. 117,227

Claims priority, application Switzerland, Feb. 1, 1979, 1000/79

Int. Cl.³ C11B *1/10*

U.S. Cl. 260—412.8 9 Claims

1. A method of recovering and/or refining animal fats by extraction using a gas at supercritical conditions, wherein the improvement comprises the step of carrying out the extraction in a static column free from circulation within the column.

4,280,962
METHODS FOR REFINING OILS AND FATS

Haruo Watanabe, Yachiyo; Mutsuhito Watanabe, Narashino; Takao Arima, Funabashi, and Kosei Yamada, Ibaraki, all of Japan, assignors to Showa Sangyo Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,023

Claims priority, application Japan, Nov. 30, 1978, 53-147140

Int. Cl.³ C11B *3/04, 3/06*

U.S. Cl. 260—424 10 Claims

1. A method of refining an animal or vegetable oil or fat which comprises:

(a) mixing said oil or fat with an aqueous solution of an alkaline substance;

(b) directly admixing the resulting mixture from step (a) with an aqueous solution of an acid;

(c) separating the insoluble matter in the oil or fat from the resulting admixture; and

(d) steam distilling the oil or fat.

4,280,963
MANGANESE COMPLEXES OF SALICYLALDEHYDE-ALKANOLIMINES AS CATALYSTS FOR THE POLYMERIZATION OF 2,6-DI-SUBSTITUTED PHENOLS

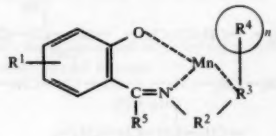
Walter K. Olander, Clifton Park, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 880,135, Feb. 22, 1978, Pat. No. 4,205,007, which is a division of Ser. No. 753,506, Dec. 21, 1976, Pat. No. 4,093,597. This application Nov. 30, 1979, Ser. No. 98,785

Int. Cl.³ C07F *3/00, 13/00*

U.S. Cl. 260—429 C 4 Claims

1. A catalyst for the oxidative coupling of a phenolic monomer which comprises a compound of the formula:



wherein R^1 is selected from hydrogen, lower alkyl of from 1 to 8 carbon atoms and phenyl; halogen, lower alkoxy of from 1 to 8 carbon atoms; R^2 is o-phenylene; lower alkoxy o-phenylene wherein the lower alkoxy group has from 1 to 8 carbon atoms; halo-o-phenylene; lower alkyl-o-phenylene wherein the lower alkyl group has from 1 to 8 carbon atoms; lower alkylene of from 2 to 3 carbon atoms; phenyl lower alkylene wherein the alkylene portion has from 2 to 3 carbon atoms and lower alkyl substituted lower alkylene wherein the lower alkyl group has from 1 to 8 carbon atoms and the alkylene portion has from 2 to 3 carbon atoms; R^3 is oxygen or nitrogen; R^4 is lower alkyleneoxy having from 2 to 3 carbon atoms, lower alkyl substituted alkyleneoxy wherein the lower alkyl group has from 1 to 8 carbon atoms and the alkylene portion has from 2 to 3 carbon atoms, o-phenyleneoxy, phenyl lower alkyleneoxy wherein the alkylene group has from 2 to 3 carbon atoms lower alkyl-o-phenylene wherein the lower alkyl group has from 1 to 8 carbon atoms or phenyl-o-phenyleneoxy; R^5 is selected from hydrogen, lower alkyl of 1 to 8 carbon atoms or phenyl; and n is 0 or 1.

4,280,964
BASIC DYES

Klaus Grychtol, Bad Durkheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 45,866

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2826981

Int. Cl.³ C07C *121/78;* C09B *23/14*

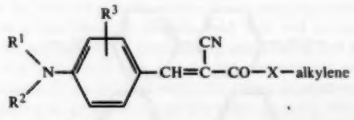
U.S. Cl. 260—465 D 2 Claims

1. A basic dye of the general formula

(I)

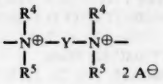
where

the substituents A independently of one another are each a radical of the formula

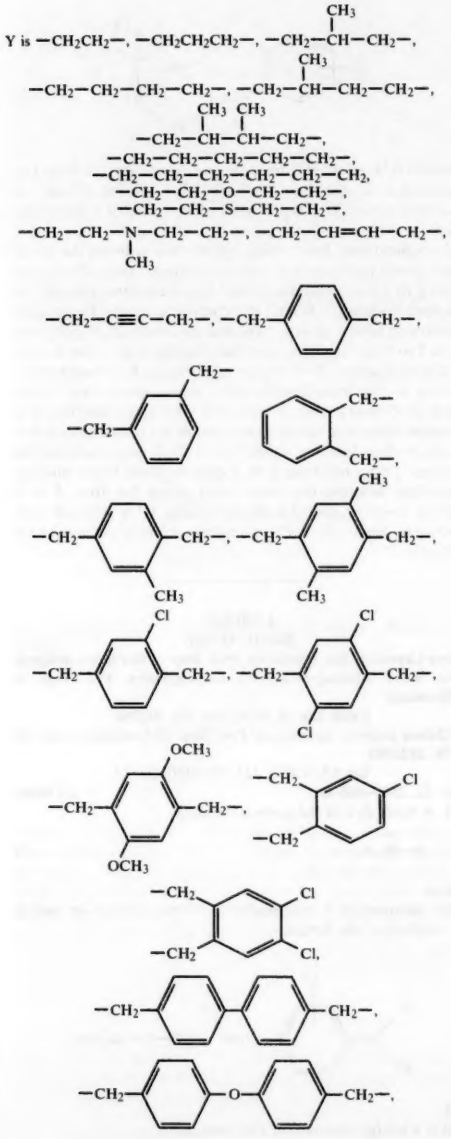


and

B is a bridge member, of the formula



where R^4 and R^5 independently of one another are C_1–C_4-alkyl or benzyl, $A^{\ominus}$ is an anion and



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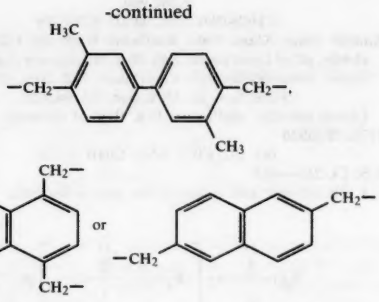


and in the formula for A

R^1 and R^2 independently of one another are C_1–C_4-alkyl which is unsubstituted or substituted by hydroxyl, C_1–C_4-alkoxy, cyano, C_1–C_4-alkoxycarbonyl, di-C_1–C_4-alkylamino, benzyl-(C_1–C_4-alkyl)amino, chlorine or bromine, or are cyclohexyl, benzyl, phenylethyl or phenyl, or

R^1 and R^2 together with the nitrogen are pyrrolidino, piperidino, morpholino or N-methylpiperazino,

R^3 is hydrogen, chlorine, bromine, methyl, ethyl, methoxy, ethoxy or nitro,

X is oxygen, imino or C_1–C_4-alkylimino and

alkylene is of 2 to 6 carbon atoms and is straight or branched.

4,280,965

PREPARATION OF CYANO SUBSTITUTED BENZYL ESTERS

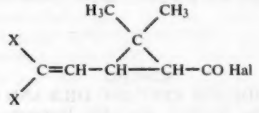
Ludwig A. Hartmann, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Apr. 21, 1980, Ser. No. 142,360

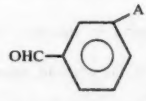
Int. Cl.[3] **C07C** *120/00, 121/66*

U.S. Cl. 260—465 D **7 Claims**

1. A process for preparing a cyano substituted benzyl ester which comprises reacting an acid halide having the following general formula:



wherein each X independently represents CF_3 or halogen and Hal represents halogen, an aldehyde having the following general formula:



wherein A is selected from the group consisting of phenoxy, phenylthio and benzyl, and a water soluble cyanide in water in the presence of a tetraalkyl ammonium halide wherein each alkyl group contains from 1 to about 4 carbon atoms.

4,280,966

PROCESS FOR THE PREPARATION OF ALKANESULFONYL CHLORIDES

Fritz Hübenett, Darmstadt, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,507

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845918

Int. Cl.[3] C07C *43/70*; C01B *7/07*

U.S. Cl. 260—543 R 9 Claims

1. In a process for preparing an alkanesulfonyl chloride having 1–12 carbon atoms by reacting at least one of the corresponding alkanethiol and dialkyl disulfide with chlorine and water at a temperature of from −10 to +50° C.; the improvement which comprises using said alkanesulfonyl chloride as the reaction medium and effecting the reaction with not more than the stoichiometric amount of water.

4,280,967

VULCANIZATION OF RUBBER WITH 2-(ALKYLSULFINYL)-BENZOTHIAZOLES

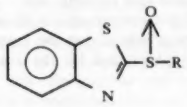
Roger J. Hopper, Akron; Budd H. Sturm, Hartville, and Joseph F. Geiser, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 20, 1980, Ser. No. 132,049

Int. Cl.[3] C08C *19/20*

U.S. Cl. 260—785 9 Claims

1. A composition comprising an elastomer derived from natural or synthetic rubber and mixtures thereof, wherein synthetic rubbers include homo- and copolymers of conjugated and nonconjugated dienes, copolymers of dienes and monoolefins, ethylene-propylene-diene-terpolymers (EPDM) and polypentenamers derived from ring opening polymerization of cyclopentene; containing a compound selected from the group consisting of accelerators having the following structural formula:



wherein R is a radical selected from the group consisting of alkyl (1–20 carbon atoms), cycloalkyl (5–20 carbon atoms), and aralkyl (7–20 carbon atoms), alkyl of 2–20 carbon atoms substituted in the 2 position by a carboalkoxy radical and cycloalkyl radical of 5 to 20 carbon atoms substituted in the 2 position by carboalkoxy radical.

4,280,968

GAS CARBURETTOR TO BE MOUNTED ON A PETROL CARBURETTOR OF A COMBUSTION ENGINE

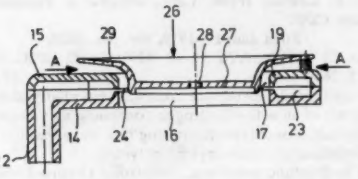
Andreas L. M. T. Smeets, Orleanshof 11, Eindhoven, Netherlands

Filed Dec. 31, 1979, Ser. No. 108,506

Int. Cl.[3] F02M *13/08*

U.S. Cl. 261—16 7 Claims

1. A gas carburettor adapted for mounting on the petrol carburettor of a combustion engine for mixing gas with air and for supplying the mixture of air and gas to the combustion engine, said gas carburettor comprising a housing defining an annular gas supply channel having a substantially vertical wall portion bounding a central passage and having an opening therein for supplying the gas to the passage and an upper substantially horizontal wall portion joining said substantially vertical wall portion near its upper edge, and a member disposed in the passage partly closing the passage and having wall portions extending substantially parallel to said substantially vertical and substantially horizontal wall portions of said gas supply channel and spaced therefrom to define wall portions of said gas supply channel and spaced therefrom to define a gap



between said channel and said member for supplying air from the environment to said passage.

4,280,969

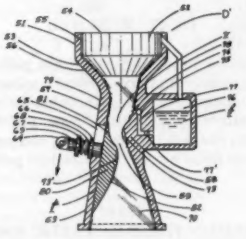
CARBURETOR

Wilbur M. Swanson, 2301 Parkridge Ave., St. Louis County, Mo. 63144

Division of Ser. No. 723,979, Sep. 16, 1976, Pat. No. 4,139,581. This application Nov. 13, 1978, Ser. No. 960,466

Int. Cl.[3] F02M *9/04*

U.S. Cl. 261—62 2 Claims



1. A carburetor comprising means defining an elognated casing having opposed ends with an air inlet provided at one end and an air-fuel mixture outlet provided at the other end, wall forming means provided in said casing between said inlet and said outlet defining a restricted passage constituting a single sonic throat for flow therethrough of air and entrained fuel, flow stabilizing means disposed on said throat, a diffuser section below said throat and connecting same with said air-fuel mixture outlet, said sonic throat being comprised of first and second coordinating wall forming components, said first component being fixed, said diffuser section having a wall of downwardly and outwardly tapering configuration, a slide body for movement upwardly and downwardly along said diffuser section, said second sonic throat component being defined by said slide body, means for moving said slide body between a first position wherein said first and second sonic throat components are in confronting relationship and a second position wherein said first and second components are offset with respect to each other with one being located relatively outwardly and downwardly of the other as being determined by the taper of said diffuser section so that said first and second components are relatively movable within a converging-diverging path for varying the cross-sectional area of the throat consequent to carburetor operational demands.

4,280,970

POLYOXYETHYLENE GRAFTED MEMBRANE MATERIALS WITH GRAFTING LINKS DERIVED FROM A DIISOCYANATE

Robert E. Kesting, Irvine, Calif., assignor to Puropore Inc., Tustin, Calif.

Filed Jan. 19, 1979, Ser. No. 4,828

Int. Cl.[3] **B01D** *39/16, 39/18;* **B29D** *11/00;* **G02C** *7/04*

U.S. Cl. 264—1.7 **37 Claims**

1. A hydrophilic membrane consisting essentially of the graft copolymer of an active hydrogen containing membrane forming polymer, a diisocyanate grafting link and an active hydrogen containing polyoxyethylene polymer.

3. A hydrophilic membrane comprising a hydrophobic polymer coated with a hydrophilic graft copolymer of a polyoxyethylene polymer, a diisocyanate grafting link and an active hydrogen containing membrane forming polymer.

6. A hydrophilic film comprising a hydrophobic polymer coated with a hydrophilic graft copolymer of a polyoxyethylene polymer a diisocyanate grafting link and an active hydrogen containing film forming polymer.

7. A contact lens consisting essentially of a graft copolymer of polyoxyethylene polymer, a diisocyanate grafting link, and a cellulose acetate-butyrate polymer.

4,280,971

PROCESS FOR THE PRODUCTION OF PANCREATIN PELLETS

Martin Wischniewski; Lutz Feicho, both of Neustadt; Gerhard Fischer, and Guenter Peschke, both of Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,963

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923279

Int. Cl.[3] **B22D** *11/01*

U.S. Cl. 264—15 **22 Claims**

1. A process for producing pancreatin pellets comprising mixing together pancreatin powder and a solvent harmless to pancreatin, forming a pliable mass suitable for extrusion from said mixture, extruding said pliable mass, pre-shaping the extruded mass into pre-pellet forms, drying said pre-pellet forms, and shaping said dried pre-pellet forms into pellets.

4,280,972

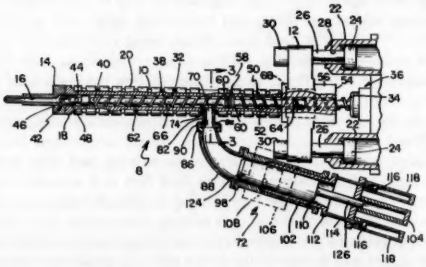
COMBINATION THERMOPLASTIC AND GLASS LOADED THERMOSETTING INJECTION MOLDING MACHINE AND METHOD FOR OPERATING SAME

Thomas G. Bishop, Mount Gilead, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Filed Oct. 1, 1979, Ser. No. 80,486

Int. Cl.[3] **B29F** *1/02;* **B29G** *3/00*

U.S. Cl. 264—39 **7 Claims**



1. In an injection molding process wherein a charge of plastics material is injected into a mold by means of a rotating and reciprocating screw, a method of converting from the injection of a thermoplastics compound to a fiber reinforced thermosetting compound comprising:

providing an injection molding machine having a barrel with a rotating and axially reciprocable plasticizing screw therein, the barrel having a first feed opening and a second feed opening forwardly of the first feed opening,

with the second feed opening closed, feeding thermoplastic compound into said barrel through the first feed opening whereupon the material is conveyed forwardly and plasticized by the rotating screw,

with the machine stopped, removing the plasticizing screw and installing a thermosetting compound conveying screw in said barrel for rotation and axial reciprocation,

opening the second feed opening, and

forcing a thermosetting compound having fibers dispersed therein into said barrel through the second feed opening whereupon the thermosetting compound is conveyed forwardly as the thermosetting compound conveying screw rotates.

4. In an injection molding process wherein a charge of plastics material is injected into a mold by means of a rotating and reciprocating screw, a method for converting from the injection of a fiber reinforced thermosetting compound to a thermoplastics compound comprising:

providing an injection molding machine having a barrel with a rotating and axially reciprocable thermosetting compound conveying screw therein, the barrel having a first feed opening and a second feed opening forwardly of the first feed opening,

with the second feed opening open, forcing a thermosetting compound having fibers dispersed therein into the barrel through the second feed opening whereupon the thermosetting compound is conveyed forwardly as the conveying screw rotates,

with the machine stopped, removing the conveying screw and installing a plasticizing screw in the barrel for rotation and axial reciprocation,

covering the second feed opening, and

feeding thermoplastic compound into the barrel through the first feed opening whereupon the material is conveyed forwardly and plasticized by the rotating plasticizing screw.

4,280,973

PROCESS FOR PRODUCING SI_3N_4 BASE ARTICLES BY THE COLD PRESS SINTER METHOD

David Moskowitz, Southfield, and Leslie L. Terner, W. Bloomfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 14, 1979, Ser. No. 94,248

Int. Cl.[3] **C04B** *35/58*

U.S. Cl. 264—63 **7 Claims**

1. A method of making Si_3N_4 based cutting tools, comprising:

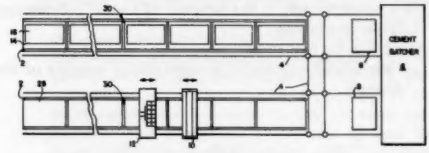
(a) pressing a uniform mixture of three powders at ambient conditions to a density substantially less than full density, the base powder constituting at least 75% by weight of said mixture and consisting of crystalline Si_3N_4, the second powder being selected from the group consisting of Y_2O_3, MgO, CeO_2, ZrO_2 and mixtures thereof, the third powder being selected from the group consisting of Al_2O_3, WC, WSi_2, W, TiC and mixtures thereof, said Al_2O_3, when selected, being limited to no more than 4%, said powders being regulated in particle size to one micron or less;

(b) in the absence of substantial mechanical pressure, sintering said pressed mixture equal to or greater than 99% theoretical density under an inert atmosphere.

4,280,974
PROCESS AND APPARATUS FOR MAKING A PLURALITY OF BUILDING MODULES HAVING A FOAM CORE AND A CEMENTITIOUS SHELL

Matthew R. Piazza, Nichols, Conn., assignor to Hamden Industries, Inc., Hamden, Conn.

Continuation-in-part of Ser. No. 810,449, Jun. 27, 1977, Pat. No. 4,133,859. This application Oct. 30, 1978, Ser. No. 956,014
Int. Cl.[3] B28B 1/08
U.S. Cl. 264—69 19 Claims



1. Process for making a plurality of building modules each having at least one insulating foam core encased in a shell of fiber reinforced cementitious material which comprises:

(a) providing a continuous longitudinal casting zone having continuous side rails along a base having transverse division members thereon positioned so as to correspond to the lengths of the modules being formed;

(b) continuously casting a bottom layer of wet cementitious material between the side rails and over the base and division members along the length of the casting zone and leveling said bottom layer so as to be even with the top of the division members;

(c) adding fiber reinforcement to the bottom layer formed in step (b) by applying fibers in discrete lengths in one or more passes over the casting zone and incorporating the fibers into the bottom layer;

(d) dividing said casting zone into lengths corresponding to the lengths of the modules being formed by inserting end members on top of the division members between the side rails;

(e) placing foam core members on each length of the bottom layer between end members, said foam core members having a peripheral shape smaller than the surface of the bottom lengths so as to leave a free space between the core member, the side rails and the end members, said core member having a height less than the height of the said side rails;

(f) applying wet cementitious material to the entire length of the casting zone so as to fill the free space surrounding each core member and to form a top layer which covers each core member thereby separately encasing each core member;

(g) applying fiber reinforcement to the top layer formed in step (f) by applying fibers in discrete lengths in one or more passes over the casting zone and incorporating the fibers into the top layer; and

(h) curing the cementitious material encasing each core and removing a plurality of cured modules from the casting zone.

4,280,975
METHOD FOR CONSTRUCTING A TURBINE SHROUD

Charles L. Ammann, Bloomfield, N.J., assignor to General Electric Company, Cincinnati, Ohio

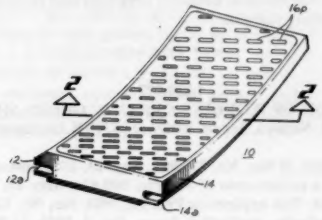
Filed Oct. 12, 1979, Ser. No. 84,243
Int. Cl.[3] F01D 25/24; B32B 3/00
U.S. Cl. 264—81 9 Claims

1. A method of constructing a turbine shroud structure, comprising the steps of:

(a) providing a metal substrate;

(b) providing said metal substrate with mechanical matrix bonding means;

(c) applying a ceramic sealing layer of zirconium oxide with magnesium oxide to said mechanical matrix bonding means; and then

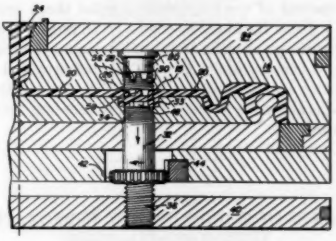


(d) heat treating said ceramic sealing layer to increase the rub wear of said ceramic sealing layer and to develop an ordered pattern of very fine cracks therein which reduce the thermal stress in said ceramic sealing layer.

4,280,976
SIMULTANEOUSLY MOLDED THREADED PORT AND PLUG

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Filed Apr. 18, 1980, Ser. No. 141,398
Int. Cl.[3] B29D 1/00
U.S. Cl. 264—152 19 Claims



1. The method of simultaneously molding a threaded port in a wall and a separate, threaded plug adapted for sealing said threaded port, which comprises:

defining first cavity means for receiving molding compound to form said wall, and second cavity means for receiving molding compound to form said threaded plug; inserting rotatable shaft means carrying external threads through said first cavity to define the threaded port, said shaft means terminating at the second cavity means; placing molding compound into said first and second cavity means for molding the wall and plug; forming a separable mechanical linkage between said end portion and plug molded in the second cavity means; rotating said shaft after hardening of the molding compound to withdraw it from the newly molded, threaded port and to rotate the molded, threaded plug into said threaded port for sealing thereof.

8. In a mold adapted to simultaneously mold a threaded port in a wall and a separate, threaded plug adapted for sealing said threaded port,

first cavity means for receiving molding compound to form said wall;

second cavity means for receiving molding compound to form said threaded plug;

rotatable shaft means carrying a helical external thread-forming groove and extending through said first cavity to define the threaded port, said shaft means terminating at said second cavity means with an end portion being shaped to form a separable mechanical linkage between

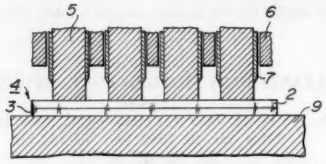
said end portion and a threaded plug molded in the second cavity means, and means for rotating said shaft after molding to withdraw it from the molded, threaded port and to rotate the molded, threaded plug into said threaded port for sealing thereof.

4,280,977

METHOD OF WORKING CERAMIC GREEN SHEET

Go Suzuki, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 935,881, Aug. 23, 1978, abandoned, which is a continuation of Ser. No. 800,424, May 25, 1977, abandoned. This application Feb. 21, 1980, Ser. No. 123,404
Claims priority, application Japan, Jun. 3, 1976, 51-04055
Int. Cl.³ B29C *17/10*
U.S. Cl. 264—153 **8 Claims**



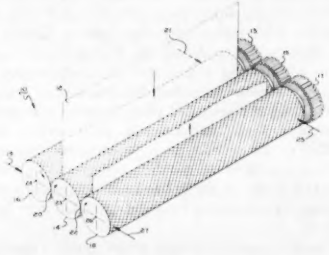
1. A method of working ceramic green sheet, comprising pushing a spacer having at its edge a given profile to a surface of the ceramic green sheet and then forcing a cylindrical knife heated at a temperature of 60°–150° C. and provided with an edge having a form substantially equal to the profile of the spacer edge along the periphery of the spacer into the ceramic green sheet.

4,280,978

PROCESS OF EMBOSSING AND PERFORATING THERMOPLASTIC FILM

Walter R. Dannheim, Andover, and John A. McNaboe, Lake Hopatcong, both of N.J., assignors to Monsanto Company, St. Louis, Mo.

Filed May 23, 1979, Ser. No. 41,869
Int. Cl.³ B29C *17/00*; B29D *27/00*
U.S. Cl. 264—156 **11 Claims**



1. In the process of embossing and perforating a thermoplastic film which includes continuously passing such film through a nip formed by pattern and backup rolls to form an embossed pattern therein, the improvement which comprises:

passing the embossed pattern while in registration with the pattern roll which previously formed said embossed pattern through a second nip formed with the same pattern roll, said embossed pattern in the second nip being drawn and perforated within permanent depressions in another cooperating backup roll to finalize the pattern detail.

4,280,979

COPOLYMERS, COMPOSITIONS, AND ARTICLES, AND METHODS FOR MAKING SAME

Raymond A. Dunleavy, Charleston, and William A. Gill, Hurricane, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,624
Int. Cl.³ C08G *18/62, 18/82, 18/14*
U.S. Cl. 264—157 **30 Claims**

1. A polyester diol/monomer composition which is convertible by reaction with a polyisocyanate to a polyurethane and which is polymerizable in the presence of a vinyl polymerization catalyst comprising

(A) a polyester diol comprising:

(a) aliphatically saturated divalent diacyl moieties of the formula

wherein R is a single bond connecting the two carbonyl groups or a divalent organic group free of aliphatic unsaturation, and olefinically unsaturated divalent diacyl moieties of the formula

wherein R′ is a divalent olefinically unsaturated organic group, said diacyl moieties being present in a mole ratio of 0.25 to 3 moles of said diacyl moieties essentially free of aliphatic unsaturation per mole of said olefinically unsaturated diacyl moieties; and

(b) divalent dioxy moieties having the formula: —OR′-′O—wherein R″ is a divalent organic group interconnecting the oxy groups shown in said formula and each oxy group shown by said formula is bonded to a non-carboxyl atom of said R″ group;

said diacyl moieties being bonded through ester linkages to said dioxy moieties in a mole ratio of at least 1.75 moles of all said dioxy moieties per mole of all said diacyl moieties; and said polyester diol

(i) being end-blocked essentially only by non-carboxylic hydroxyl groups bonded to dioxy moieties as defined in (b) hereinabove; and

(ii) having an acid number of less than 3,

(B) a polymerizable ethylenically unsaturated monomer present in an amount providing about 1 to about 6 ethylenically unsaturated groups of said monomer per olefinically unsaturated group of said polyester diol,

(C) a catalyst capable of catalyzing polyurethaneforming reactions of polyisocyanates and polyhydroxy compounds, and

(D) a vinyl polymerization inhibitor.

7. Tough polyurethane/vinyl polymer copolymer of

(I) a polyester diol comprising:

(a) aliphatically saturated divalent diacyl moieties of the formula

wherein R is a single bond connecting the two carbonyl groups or a divalent organic group free of aliphatic unsaturation, and olefinically unsaturated divalent diacyl moieties of the formula

wherein R' is a divalent olefinically unsaturated organic group, said diacyl moieties being present in a mole ratio of 0.25 to 3 moles of said diacyl moieties essentially free of aliphatic unsaturation per mole of said olefinically unsaturated diacyl moieties; and

(b) divalent branched dioxy moieties having the formula: —OR''O—wherein R'' is a divalent branched chain composed of carbon and hydrogen or carbon, hydrogen and oxygen and containing 2 to 8 consecutive atoms of carbon and oxygen interconnecting the oxy groups shown in said formula and having alkyl groups of one to eight carbon atoms bonded to one or more carbon atoms of said consecutive atoms, and divalent linear dioxy moieties having the formula: —OR'''O—wherein R''' is a linear chain composed of carbon and hydrogen or carbon, hydrogen and oxygen and containing 2 to 8 consecutive atoms of carbon or carbon and oxygen interconnecting the oxy groups shown in said formula, said dioxy moieties being present in a mole ratio of 0.3 to 3 moles of said branched dioxy moieties per mole of said linear dioxy moieties;

said diacyl moieties being bonded through ester linkages to said dioxy moieties in a mole ratio of at least 1.75 moles of all said dioxy moieties per mole of all said diacyl moieties; and said polyester diol

(i) being end-blocked essentially only by alcoholic hydroxyl groups formed from oxy atoms of dioxy moieties as defined in (b) hereinabove; and

(ii) having an acid number of less than 3,

(II) a polymerizable ethylenically unsaturated monomer present in an amount providing about 1 to about 6 ethylenically unsaturated groups of said monomer per olefinically unsaturated group of said polyester diol, and

(III) a polyisocyanate present in an amount providing about 0.9 to about 1.2 isocyanate groups per hydroxyl group of said polyester diol.

4,280,980

PROCESS AND APPARATUS FOR HANDLING AND/OR STORING GALLIUM IN THE METALLIC STATE

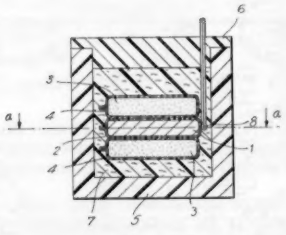
Jean-Claude Bontempelli, Champigny sur Marne, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Dec. 19, 1979, Ser. No. 105,229

Claims priority, application France, Nov. 6, 1979, 79 27284

Int. Cl.³ B01J *19/00*; B65D *85/84, 81/38*

U.S. Cl. 422—40 **17 Claims**



1. A process for protecting gallium in the solid metallic state from melting upon its handling and/or storage, comprising enclosing the gallium in an enclosure which is heat-insulated from the environment and placing with said gallium within the said enclosure a protective compound having an incipient melting temperature of between about 20° C. and 29.70° C.

14. A device or apparatus for protecting gallium in the solid metal state from melting upon its handling and/or storage, comprising the said gallium metal, an air-tight envelope containing a protective compound having an incipient melting temperature of between about 20° C. and 29.70° C., and a closed enclosure containing said gallium and said air-tight envelope and thermally protecting the resulting assembly from the outside environment.

4,280,981

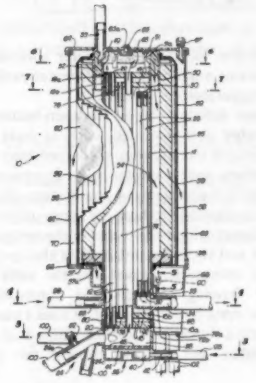
BLOOD OXYGENATOR

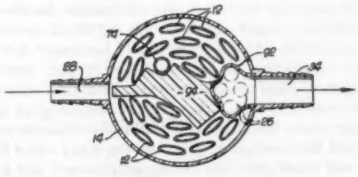
Frederick D. Harnsberger, Irvine, Calif., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Nov. 6, 1979, Ser. No. 91,771

Int. Cl.³ A61M *1/03*

U.S. Cl. 422—46 **19 Claims**



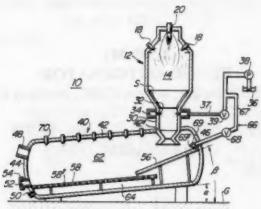


1. In a blood oxygenator having a first generally cylindrical chamber with a plurality of oxygenator tubes disposed therein in a predetermined configuration, a blood-oxygen manifold joined to said chamber and having a blood inlet and an oxygen inlet, said manifold configured such that a mixture of blood and oxygen is directed into said tubes adjacent one end thereof, and means for defoaming said mixture of blood and oxygen as it exits out the other end of said oxygenator tubes, the improvement comprising wherein each said oxygenator tube has a generally elliptical cross-section with the elongated axis of each said tube being generally perpendicular to the radius of said first chamber, and further wherein said tubes are positioned in said predetermined configuration in a generally annular array so as to define a central, open space extending from one end of said chamber to the other.

4,280,982
APPARATUS FOR TREATING WASTE MATERIAL WHILE PREVENTING SMELT-WATER EXPLOSIONS

Mamoru Shindome, c/o Asahi Engineering Co., Ltd. of 4100, Asahimachi-6-chome, Nobeoka-shi, Japan; Takanori Yanagita, Nobeoka, Japan; Takanori Nakamura, Nobeoka, Japan, and Hiroyuki Otsuji, Nobeoka, Japan, assignors to Mamoru Shindome, Osaka, Japan

Filed Mar. 19, 1979, Ser. No. 21,538
Claims priority, application Japan, Mar. 23, 1978, 53-32302; Mar. 23, 1978, 53-32303
Int. Cl.[3] B01J *19/26;* D21C *11/12*
U.S. Cl. 422—185 11 Claims



1. An apparatus for treating a water solution of a waste material containing a salt having smelt-water explosion characteristics, said apparatus comprising:

an incinerator defining therein an open-bottomed combustion chamber and provided with at least one sprayer through which the solution is sprayed into said combustion chamber, and a substantially downwardly directed fuel burner for producing a combustion of a fuel in said combustion chamber to heat the spray of the solution to a temperature at which the water in the sprayed solution is vaporized and the salt contained in the spray solution is fused, the combustion gases and the water vapor thus produced flowing through said combustion chamber toward the open bottom thereof, at least a part of the fused salt forming a deposit on the inner surface of said combustion chamber and flowing toward the open bottom thereof;

a gas-liquid separator comprising a substantially closed vessel provided with an inlet substantially vertically aligned with said open bottom of said combustion chamber, a gas outlet and a liquid outlet, the gas and liquid outlets being remote from said inlet in generally horizontal direction;

means connecting the open bottom of said combustion chamber to said vessel to provide a fluid-flow communication therebetween so that the combustion gases and the water vapor flow from said combustion chamber into said vessel, the combustion gases and the water vapor flowing in said vessel generally horizontally toward said gas outlet, the fused salt which forms said deposit falling from said combustion chamber through said inlet into said vessel by gravity, wherein the improvement comprises;

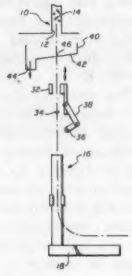
a baffle member in the form of a substantially flat plate disposed in said vessel and having a substantially flat inclined surface intersecting the vertical axis of said inlet so that the salt falls onto said inclined surface, the angle of inclination of said inclined surface to the horizontal ranging from 5° to 60°; and

means for establishing on said inclined surface a flow of water of a depth ranging from 0.5 to 5.0 mm so that the salt falling onto said inclined surface is only partially dipped in the water flow and is moved on the inclined surface generally toward said liquid outlet while being cooled by the water flow, said means for establishing a flow including a water supply tube ending adjacent the upper end of the flat plate.

4,280,983
CATALYST UNLOADING MECHANISM

Roger F. Irwin, P. O. Drawer C, Abbeville, La. 70510

Filed Oct. 9, 1979, Ser. No. 82,706
Int. Cl.[3] B01J *8/06*
U.S. Cl. 422—219 8 Claims



1. A catalyst unloading mechanism for unloading material from a reaction vessel having a plurality of catalyst tubes, which comprises:

base means positionable in stationary manner within said vessel:

a support frame movably mounted to said base means;

first linear actuator means interconnecting said base means and support frame for controllably imparting linear movement of said support frame within said vessel;

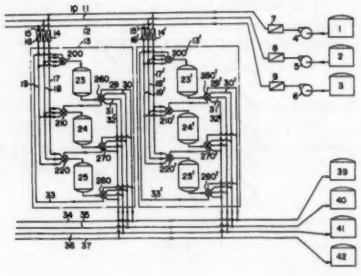
a reciprocating frame movably connected to said support frame; a plurality of probe elements secured in substantially immovable relation to said reciprocating frame; and

second linear actuator means interconnecting said support frame and reciprocating frame, said second linear actuator means being operative to reciprocate said probe elements as said support frame is moved by said first linear actuator means to dislodge material from said catalyst tubes.

4,280,984
ISOTOPE SEPARATION

Tetsuya Miyake, Kawasaki; Norito Ogawa, Yokohama; Kohji Inada, Yokohama, and Kunihiko Takeda, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 11, 1978, Ser. No. 941,505
Claims priority, application Japan, Sep. 14, 1977, 52-109858
Int. Cl.[3] C01G *56/00;* B01J *39/00, 41/00, 47/00*
U.S. Cl. 423—6 7 Claims



1. A process for separating isotopes employing an apparatus comprising a plurality of separation units assembled in parallel, each separation unit comprising at least two adsorbent-packed columns in series and forming a continuous developing loop,

and at least one common liquid-supply pipe connected to each separation unit through a liquid flow rate regulator, the process comprising supplying an isotope mixture solution to each separation unit through one of the common liquid-supply pipes, and continuously developing the isotope mixture serially and repeatedly through all the columns making up each unit thereby to separate the isotopes.

4,280,985

PROCESS FOR THE ELUTION OF ION EXCHANGE RESINS IN URANIUM RECOVERY

Tsoung-yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,129
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—7 **6 Claims**

1. In a method for the recovery of uranium from a pregnant lixiviant wherein uranium is adsorbed from said lixiviant by an anion ion exchange resin and thereafter eluted from said resin by contacting said resin with an eluant, the improvement comprising:

eluting said uranium from said resin with an eluant containing ammonium carbonate in a concentration within the range of 0.05–0.5 molar and a base in an amount sufficient to increase the pH of said eluant to a value within the range of 9.0–11.0.

4,280,986

METHOD FOR SEPARATING METAL VALUES FROM SEA NODULES

Harry Zeitlin, Honolulu, Hi., and Quintus Fernando, Tucson, Ariz., assignors to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 676, Jan. 3, 1979, abandoned. This application Jul. 17, 1980, Ser. No. 169,549
Int. Cl.³ C01G *3/10, 51/10, 53/10, 45/10*
U.S. Cl. 423—41 **1 Claim**

1. In a process for separating manganese, cobalt, copper, and nickel metal values from ferromanganese sea nodule ores comprising the steps of:

(a) contacting said nodule ore with sulfur dioxide in the presence of oxygen to convert said metal values to water-soluble salts;

(b) leaching the product of step (a) with water to form a solution of said water-soluble salts;

(c) separating water-insoluble residue from the solution of step (b); and

(d) separating and recovering said metal values from the solution obtained from step (c);

the improvement providing essentially quantitative recovery of manganese, cobalt, and nickel values and about 75% recovery of copper values based on the initial content of said metal values in said nodule ore, consisting of preheating said nodule ore in finely-divided state at elevated temperature until substantially dry prior to said contacting step, and conducting said contacting step with said nodule ore in substantially dry state under substantially dry conditions at a temperature within the range of from about 375° to about 425° C.

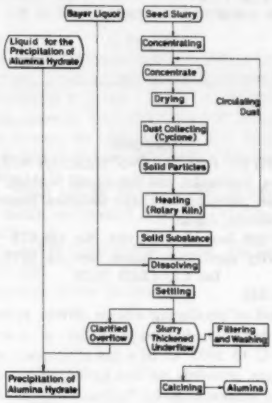
4,280,987

METHOD FOR TREATMENT OF BAYER LIQUOR

Yasunori Yamada, Tokyo, and Yuji Shibue, Kamakura, both of Japan, assignors to Showa Aluminum Industries K.K., Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,521
Claims priority, application Japan, Jul. 11, 1978, 53-83494
Int. Cl.³ C01F *7/06*
U.S. Cl. 423—119 **7 Claims**

1. A method for the removal of carbon compounds from the Bayer liquor having aluminum compounds and sodium compounds as the principal components, also containing carbon compounds and circulating through a system for the manufacture of alumina from an alumina-containing ore by the Bayer Process, which method comprises adjusting the molar ratio of the aluminum component to the sodium component in the Bayer liquor to a value falling in the range of from 1 to 5



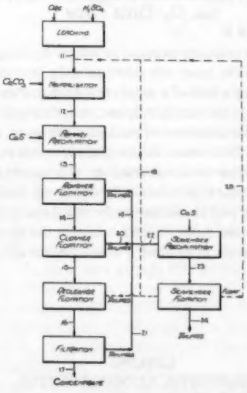
calculated as Al_2O_3/Na_2O and thereafter heating the resultant Bayer liquor at a temperature in the range of from 500° to 1350° C.

4,280,988

RECOVERY OF NICKEL AND COBALT FROM LEACH SLURRIES

Kohur N. Subramanian, East Hanover, N.J.; Gerald V. Glaum, Oakville, and Einar Walli, Burlington, both of Calif.X, assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,402
Int. Cl.³ C01G *51/00, 53/11*
U.S. Cl. 423—140 **9 Claims**



1. A process for separating at least one non-ferrous metal selected from the group consisting of nickel and cobalt from a slurry which contains dissolved non-ferrous metal(s) and iron oxide solids, comprising adjusting the acidity of the slurry, if necessary, to ensure that the pH thereof does not exceed about 4; contacting the slurry with a sulfiding agent selected from the group consisting of calcium sulfide and barium sulfide, at a temperature of about 60°–80° C., in a plurality of series-connected reactors, the residence time in the first reactor of the series being shorter than about 15 minutes; controlling the overall residence time as well as the amount of sulfiding agent

used to ensure precipitation of a large proportion of the non-ferrous metal as a sulfide; and thereafter subjecting the resulting slurry to flotation to recover a high grade concentrate containing a large proportion of the non-ferrous metal and a tailings slurry containing substantially all of the iron oxide solids.

4,280,989

METHOD OF PREPARING SILICON NITRIDE

Motoo Seimiya, Yokosuka, and Katsutoshi Nishida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 12, 1980, Ser. No. 158,875
Claims priority, application Japan, Nov. 14, 1979, 54/146497
Int. Cl.³ C01B *21/06*
U.S. Cl. 423—344 **9 Claims**

1. A method of producing silicon nitride powder which comprises heating finely divided particulate silica to a temperature of 1200° C. to 1600° C. in a gas atmosphere comprising hydrocarbon gas, ammonia gas and hydrogen gas wherein the volume ratio of ammonia (NH_3)/hydrocarbon (methane equivalent) is between 0.1 and 50 and the volume ratio of hydrogen (H_2)/hydrocarbon (methane equivalent) is between 1 and 100.

4,280,990

HIGH PRESSURE PROCESS FOR RECOVERY OF SULPHUR FROM GASES

Richard F. Jagodzinski, and Richard K. Kerr, both of Calgary, Canada, assignors to Hudson's Bay Oil and Gas Company Limited and Alberta Energy Company Ltd., both of Alberta, Canada

Filed Apr. 3, 1980, Ser. No. 136,789
Claims priority, application Canada, Dec. 11, 1979, 341597
Int. Cl.³ C01B *17/04*
U.S. Cl. 423—574 R **68 Claims**

1. A sulphur producing process in which hydrogen sulphide and sulphur dioxide gases are continuously introduced into a reactor containing a bed of a catalyst which causes these gases to react to produce elemental sulphur, wherein said gases when in the reactor are maintained at such conditions of temperature and pressure that free water in the reactor exists only as water vapour and sulphur is condensed in the catalyst bed, and wherein said sulphur is continuously removed from the bed as a liquid while the bed is continuously maintained substantially saturated with liquid sulphur, and wherein the pressure in the reactor is maintained at at least 5 atmospheres absolute.

4,280,991

DIAGNOSTIC COMPOSITIONS

William M. Burch, Duffy, Australia, assignor to Capital Territory Health Commission, Canberra City, Australia

Filed Jul. 27, 1978, Ser. No. 928,615
Claims priority, application Australia, Jul. 29, 1977, PD1020
Int. Cl.³ A61K *49/00, 43/00;* G01T *1/00*
U.S. Cl. 424—1 **2 Claims**

2. A method for introducing radionuclides into the lungs of a patient for lung examination comprising the steps of:

(i) combusting a composition consisting essentially of alkali metal pertechnetate dissolved in ethyl alcohol;

(ii) cooling the resulting product; and

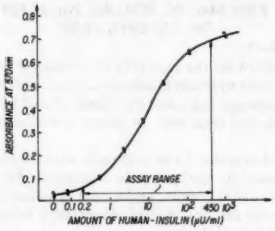
(iii) inhaling the same.

4,280,992

IMMUNOLOGICALLY ACTIVE SUBSTANCE-GLASS CONJUGATES, PROCESS FOR PRODUCING THE SAME AND DIAGNOSTIC REAGENTS CONTAINING THE SAME

Masakuzu Sugiura, Nara; Junichiro Kikutake, Osaka; Masaru Yoshida, and Shigeharu Kondo, both of Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jan. 23, 1979, Ser. No. 5,856
Claims priority, application Japan, Feb. 14, 1978, 53-16342
Int. Cl.³ G01N *33/48;* G01T *1/00*
U.S. Cl. 424—1 **35 Claims**



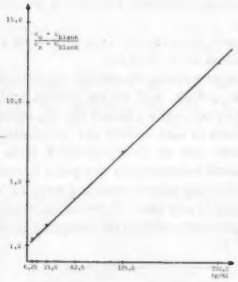
1. An immunologically active substance-glass conjugate which comprises an immunologically active substance bound to a frosted glass.

4,280,993

PROCESS FOR DETERMINING THE CONCENTRATION OF BENZODIAZEPINES IN A BODY FLUID

Claus Braestrup, Ibstrupvej 48, DK-2820 Gentofte, Denmark, and Richard F. Squires, CNS Biology Medical Research Laboratories, Lederle Laboratories, Pearl River, N.Y. 10965

Filed Jan. 18, 1979, Ser. No. 4,619
Claims priority, application United Kingdom, Jan. 19, 1978, 2164/78
Int. Cl.³ G01N *33/48;* A61K *43/00;* G01T *1/00*
U.S. Cl. 424—1 **13 Claims**



1. A process for determining the concentration of benzodiazepines in a body fluid, comprising the steps of contacting freeze-dried brain tissue with a radio-labelled benzodiazepine to form a preparation comprising said brain tissue and labelled benzodiazepine reversibly bonded thereto, determining the concentration of radio-labelled bound benzodiazepine in said preparation, contacting a sample of the body liquid or an extract of such liquid containing the benzodiazepine, the concentration of which is to be determined, with said preparation to establish an equilibrium between labelled and un-labelled benzodiazepine bonded to said brain tissue, determining the concentration of labelled benzodiazepine bonded to said brain tissue after establishing equilibrium conditions and calculating

the concentration of benzodiazepine in the sample based on the change of concentration of labelled benzodiazepine in the brain tissue induced by benzodiazepines contained in the sample.

4,280,994

ANTIPERSPIRANT STICK COMPOSITIONS

Mary E. Turney, Briarcliff Manor, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 10, 1977, Ser. No. 767,489
Int. Cl.[3] A61K *7/32, 7/38*
U.S. Cl. 424—68 16 Claims

1. An antiperspirant stick composition comprising:

A. from about 35 to about 55 parts of one or more volatile silicone composition; having a boiling point of less than 300° C. at 760 mm. of Hg.

B. from about 15 to about 35 parts of one or more materials having wax-like characteristics;

C. from about 18 to about 50 parts of one or more compounds having antiperspirant properties; and

D. from about 2 to about 10 parts of a polyethylene glycol composition having an average molecular weight within the range of from about 950 to about 1600.

4,280,995

ORAL SUSPENSION OF PHENYTOIN

Muriel R. Loran, New York, N.Y., assignor to Pharmaceutical Associates, Inc., Tampa, Fla.

Filed Dec. 31, 1979, Ser. No. 108,345
Int. Cl.[3] A61K *31/70;* C07H *17/00*
U.S. Cl. 424—180 11 Claims

1. A compound comprising the reaction product prepared by intimately admixing an aqueous solution of guaran and a solution or dispersion of 5,5-diphenyl -2,4-imidazolidinedione.

6. A composition in dosage form comprising an anti-convulsant effective amount of the product of claim 1 and a pharmaceutically acceptable carrier.

9. A method for reducing the severity of generalized tonic-clonic seizures and complex partial seizures in animals and humans comprising administering to an animal or human in need thereof an anti-convulsant effective amount of the product of claim 1.

4,280,996

FAT EMULSION FOR INTRAVENOUS INJECTION

Hiroyuki Okamoto, Akashi; Yoshio Tsuda, Kyoto, and Kazumasa Yokoyama, Toyonaka, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Sep. 13, 1979, Ser. No. 75,684
Claims priority, application Japan, May 7, 1979, 54-55476
Int. Cl.[3] A61K *31/20, 31/56, 31/685;* B01J *13/00*
U.S. Cl. 424—199 4 Claims

1. A fat emulsion suitable for intravenous injection comprising 5 to 50 (w/v)% of soybean oil, yolk phospholipids in a weight ratio of the soybean oil of ¼ to 1/25, glycerol or glucose as an isotonic agent, the diameter of the emulsified particles being 0.1μ or less, water, 0.01 to 0.30 (w/v)% of a fatty acid having 12 to 20 carbon atoms or a pharmaceutically acceptable salt thereof and 0.005 to 0.50 (w/v)% of cholesterol.

4,280,997

EXTRUSION PROCESS FOR THE PREPARATION OF ANHYDROUS STABLE LACTOSE

Johannes Van Leverink, Grevelingenhof 3, Veghel, Netherlands

Filed Dec. 6, 1979, Ser. No. 100,872
Claims priority, application Netherlands, Dec. 8, 1978, 7812002
Int. Cl.[3] C13K *5/00;* A61K *33/16*
U.S. Cl. 424—151 6 Claims

1. A process for the preparation of anhydrous stable lactose, comprising introducing crystalline alpha-lactose hydrate as a dry product into an extruder, wherein a gradual, controlled, build-up of shear takes place and wherein the jacket of said extruder is heated to temperature above 100° C. such that anhydrous stable lactose is produced, and extruding said crystalline alpha-lactose with this extruder.

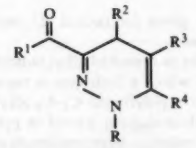
4,280,998

1,4-DIHYDROPYRIDAZINE-3-CARBOXYLIC ACID DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS ANTIHYPERTENSIVES

Gerhard Franckowiak; Friedrich Bossert; Arend Heise, and Robertson Towart, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,590
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834624
Int. Cl.[3] A61K *31/50;* C07D *237/04, 409/04, 401/04*
U.S. Cl. 424—250 14 Claims

1. A compound of the formula

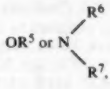


(I)

in which

R is a hydrogen atom or a straight-chain or branched alkyl radical having 1 to 8 carbon atoms which is optionally interrupted in the chain by one or two oxygen atoms, or a mono- or bi-cyclic carbocyclic aryl or ar-C_1–C_4-alkyl radical,

R^1 is a group of the formula



in which

R^5 is a hydrogen atom or a straight-chain, branched or cyclic, saturated or unsaturated aliphatic hydrocarbon radical, having up to 8 carbon atoms, which is optionally interrupted in the saturated or unsaturated aliphatic chain by 1 or 2 oxygen or sulphur atoms and which is optionally substituted by a hydroxyl or halogen; or by a phenoxy or phenyl group which is optionally substituted by a halogen, cyano amino, C_1–C_8 alkylamino, C_1–C_8-alkoxy, C_1–C_8-alkyl, trifluoromethyl or nitro, or by an α-, β- or γ-pyridyl group or by an amino group, this amino group optionally carrying either hydrogen and one substituent or two identical or different substituents selected from C_1–C_8-alkyl, C_1–C_8-alkoxy-alkyl, C_1–C_8-alkyl, a mono- or bi-cyclic carbocyclic aryl and a mono- or bi-cyclic carbocyclic ar-C_1–C_4-alkyl, or

R^5 is a mono- or bi-cyclic carbocyclic aryl group which is optionally substituted by one or two identical or different substituents selected from C_1–C_8-alkyl, C_1–C_8-alkoxy, a mono- or bi-cyclic carbocyclic aryl, a mono- or bi-cyclic carbocyclic ar-C_1–C_4-alkyl, halogen, nitro, cyano, trifluoromethyl, trifluoromethoxy, amino and mono-C_1–C_8 and di-C_1–C_8-alkylamino,

R^6 is a hydrogen atom or a C_1–C_8-alkyl, a mono- or bi-cyclic carbocyclic aryl, a mono- or bi-cyclic carbocyclic ar-C_1–C_4-alkyl, thienyl, furyl or pyridyl radical which optionally carries 1 to 3 identical or different substituents selected from halogen, nitro, cyano, trifluoromethyl, trifluoromethoxy, C_1–C_8-alkoxy, C_1–C_8-alkyl and di-C_1–C_8-alkylamino and

R^7 is a hydrogen atom or an amino or mono-C_1–C_8- or di-C_1–C_8-alkylamino group, or has a meaning given for radical R^6, without being identical to R^6,

R^2 is a mono- or bi-cyclic carbocyclic aryl radical or a thienyl, furyl, pyrryl, pyrazolyl, imidazolyl, oxazolyl, isooxazo.. l, thiazolyl, pyridyl, pyridazinyl, pyrimidyl, pyrazinyl, quinolyl, isoquinolyl, indolyl, benzimidazolyl, quinazolyl or quinoxalyl radicals, said aryl radical and said heterocyclic radicals optionally containing 1 to 3 identical or different substituents selected from phenyl, C_1–C_8-alkyl, C_1–C_8-alkoxy, halogen, trifluoromethyl, cyano, trifluoromethoxy, hydroxyl, nitro, azido, carboxyl, carb C_1–C_8-alkoxy, carboxamido, sulphonamido, SO_2-C_1–C_8-alkyl and SO_2-trifluoroalkyl,

R^3 is a hydrogen atom or a group of the formula COR^8,

in which

R^8 is an C_1–C_8-alkyl, a mono- or bi-cyclic carbocyclic aryl or a mono- or bi-cyclic carbocyclic ar-C_1–C_4-alkyl aralkyl radical or a group of the formula OR^9,

in which

R^9 has a meaning given for radical R^5, but need not be identical to R^5, and

R^4 is a straight-chain or branched alkyl radical having 1 to 8 carbon atoms in which a hydrogen is replaced by a hydroxyl group, or a polyfluoro C_1–C_8-alkyl radical or a phenyl, benzyl, thienyl, furyl, pyrryl or pyridyl radical.

5. A method of combating hypertension in warm-blooded animals which comprises administering to the animals an antihypertensively effective amount of an active compound according to claim **1** either alone or in admixture with a diluent or in the form of a medicament.

4,280,999

INSECTICIDAL PROCESS UTILIZING CERTAIN URACILS

Carrol D. Steelman; Doyle M. Chambers, and Michael D. Andis, all of Baton Rouge, La., assignors to Louisiana State University Board of Supervisors, Baton Rouge, La.

Filed Aug. 9, 1979, Ser. No. 65,381

Int. Cl.[3] **A01N** *43/54*

U.S. Cl. 424—251 **7 Claims**

1. A process for killing insects by applying to said insects and to substrates susceptible to infestation by said insects or their larvae an insecticidally effective amount, but less than a herbicidally effective amount, of a compound which is selected from the group consisting of 5-bromo-3-sec-butyl-6-methyluracil, 5-bromo-3-sec-butyl-6-methyluracil, sodium salt, 5-chloro-3-sec-butyl-6-methyluracil, 5-bromo-3-tert-butyl-6-methyluracil, 5-chloro-3-tert-butyl-6-methyluracil, 5-bromo-3-(1-ethylpropyl)-6-methyluracil, 5-chloro-3-(1-ethylpropyl)-6-methyluracil, 5-bromo-3-isopropyl-6-methyluracil, 5-chloro-3-isopropyl-6-methyluracil, 5-chloro-3-cyclohexylmethyl-6-methyluracil, 3-cyclohexyl-5-methoxy-6-methyluracil, 3-sec-buty-5, 6-dimethyluracil, 5-bromo-6-methyl-3-norbornylmethyluracil, 3-sec-butyl-6-methyl-5-nitrouracil, 3-cyclo-hexyl-5, 6-dimethyluracil, 5-bromo-3-cyclohexyl-6-methyluracil and 5-chloro-3-phenyl-6-methyluracil.

4,281,000

SUBSTITUTED PYRAZOLO (1,5-A)PYRIMIDINES AND THEIR USE AS ANXIOLYTIC AGENTS

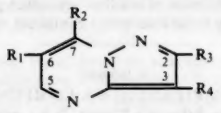
John P. Dusza, and Jay D. Albright, both of Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 55,941, Jul. 9, 1979, abandoned. This application Feb. 26, 1980, Ser. No. 124,686

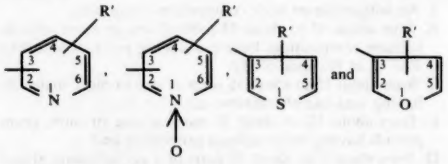
Int. Cl.[3] **A61K** *31/505;* **C07D** *487/04*

U.S. Cl. 424—251 **18 Claims**

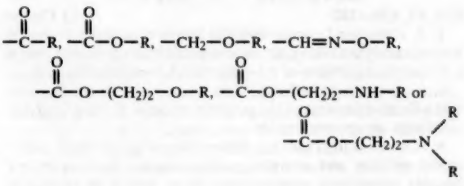
1. A compound selected from the group consisting of those of the formula:



wherein R_1 is hydrogen or alkyl having from 1 to 3 carbon atoms; R_2 is selected from the group consisting of



wherein R′ is hydrogen or alkyl having from 1 to 3 carbon atoms; R_3 is hydrogen, fluoro, chloro, bromo, cyano, cyanomethyl, carbamoyl or alkyl having from 1 to 3 carbon atoms; R_4 is selected from the group consisting of hydrogen, fluoro, chloro, bromo, formyl, carboxyl, cyano, hydroxymethyl, N-hydroxyformimidoyl, alkyl having from 1 to 3 carbon atoms and moieties of the formulae:



where R is alkyl having from 1 to 3 carbon atoms, and the pharmacologically acceptable acid-addition salts thereof.

16. The method of meliorating anxiety in a mammal which comprises administering internally to said mammal an effective amount of a compound of claim **1**.

4,281,001

METHOD FOR TREATMENT OF RHEUMATISM

Yutaka Maruyama; Kazuhiro Goto, and Michio Terazawa, all of Nakatsu, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Apr. 14, 1980, Ser. No. 139,624

Claims priority, application Japan, Jan. 17, 1980, 55-4161

Int. Cl.[3] **A61K** *31/435*

U.S. Cl. 424—256 **4 Claims**

1. A method of treating rheumatism in a mammal which comprises administration to said mammal which has rheumatism of an effective amount of 9-chloro-7-(1H-tetrazol-5-yl)-5-oxo-5H-[1H]benzopyrano-[2,3-b]pyridine, a pharmaceutically effective salt and a pharmaceutically effective hydrate thereof.

4,281,002
3-(2-AMINOETHYLTHIO)-6-AMIDO-7-OXO-1-AZABICYCLO(3.2.0)-HEPT-2-ENE-2-CARBOXYLIC ACID

Burton G. Christensen, Metuchen; Ravindra N. Guthikonda, Edison; David B. R. Johnston, Warren, and Susan M. Schmitt, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 30,786, Apr. 17, 1979, Pat. No. 4,224,336. This application Oct. 3, 1979, Ser. No. 81,518

Int. Cl.[3] **C07D** *487/04;* **A61K** *31/395*

U.S. Cl. 424—263 **2 Claims**

1. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound and a pharmaceutical carrier therefor.

4,281,003
1-(2-6-DIHALOBENZOYL)-3-(5-SUBSTITUTED-2-PYRIDINYL)UREA INSECTICIDES AND INSECTICIDAL METHOD

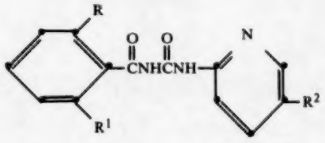
John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 938,723, Aug. 31, 1978, Pat. No. 4,219,557. This application Jan. 23, 1980, Ser. No. 114,770

Int. Cl.[3] **C07D** *213/75;* **A01N** *43/40*

U.S. Cl. 424—263 **32 Claims**

1. A compound of the formula



wherein

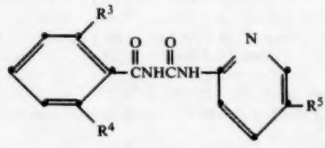
R and R^1 are fluoro, and

R^2 is trifluoromethyl;

or wherein R is chloro, R^1 is fluoro, and R^2 is chloro, bromo or trifluoromethyl;

or an acid addition salt thereof.

17. A method of reducing a population of manure-breeding insects which comprises orally administering to a warm-blooded animal an insecticidally-effective amount of a compound of the formula



wherein R^3 and R^4 independently represent chloro or fluoro; R^5 is chloro, bromo or trifluoromethyl; provided that, when R^3 and R^4 are both chloro, R^5 is trifluoromethyl; or a physiologically-acceptable acid addition salt thereof.

4,281,004
PHENYLGUANIDINE THERAPEUTIC AGENTS

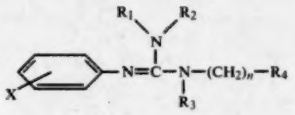
Jeffrey L. Ives, King of Prussia, Pa., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,374

Int. Cl.[3] **A61K** *31/44;* **C07D** *401/12, 405/12;* **A61K** *31/40*

U.S. Cl. 424—263 **5 Claims**

1. A compound selected from the group consisting of phenylguanidine bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein

X is a member selected from the group consisting of hydrogen, fluorine, chlorine, bromine, trifluoromethyl, lower alkyl and lower alkoxy;

R_1 and R_2, when taken separately, are each lower alkyl, and when taken together complete a pyrrolidino ring;

R_3 is hydrogen or lower alkyl;

R_4 is a member selected from the group consisting of pyridyl, furyl and thienyl; and

n is an integer of from zero to four, inclusive.

4,281,005
NOVEL 2-PYRIDYLIMIDAZOLE COMPOUNDS

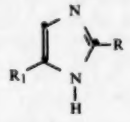
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 17,877, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 891,662, Mar. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 755,777, Dec. 30, 1976, abandoned. This application Jun. 6, 1980, Ser. No. 157,927

Int. Cl.[3] **A61K** *31/415;* **C07D** *401/02*

U.S. Cl. 424—263 **6 Claims**

1. A compound having the formula



wherein R is 4-pyridyl and R_1 is C_1–C_5 alkyl or pharmaceutically acceptable salt thereof.

5. Method of treating hypertension in humans which comprises administering an effective amount of compound of claim 1.

4,281,006
2-(DIPHENYLALKYLIMINO)PIPERIDINE-3-CARBOXANILIDES AS INHIBITORS OF GASTROINTESTINAL HYPERSECRETION

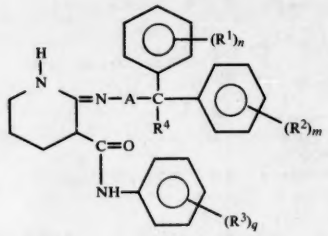
J. Martin Grisar, and Norbert L. Wiech, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed May 2, 1980, Ser. No. 146,132

Int. Cl.[3] **A61K** *31/445;* **C07D** *211/60*

U.S. Cl. 424—267 **27 Claims**

13. A method of treating gastrointestinal hypersecretion in a patient suffering from the symptoms thereof, which comprises administering to said patient an amount effective for inhibiting gastrointestinal hypersecretion of a compound of the formula



wherein A is a bond or C_{1-4} alkylene; R^1, R^2 and R^3 are independently a halogen atom, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, CF_3, SCF_3 or OCF_3; R^4 is a hydrogen atom or C_{1-4} alkyl; and n, m and q are independently an integer from 0 to 3; or a pharmaceutically acceptable acid addition salt thereof.

4,281,007

METHOD OF STABILIZING SOIL-APPLIED DIMETHYLCARBAMYLTRIAZOLES

Gayle E. Back, Olathe, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1978, Ser. No. 891,985
Int. Cl.³ A01N *43/64*
U.S. Cl. 424—269 **6 Claims**

1. The method of improving the stability of a dimethylcarbamyltriazole pesticide against decarbamylation in contact with a finely divided argillaceous substance comprising incorporating therewith at least one part by weight of a non-ionic aliphatic polyol per ten parts by weight of dimethylcarbamyltriazole.

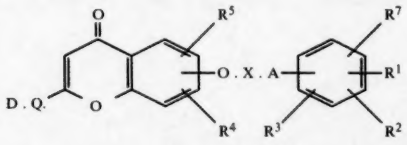
4,281,008

PHARMACEUTICAL HETEROCYCLIC COMPOUNDS AND COMPOSITIONS

Terence R. Chamberlain, Kimarnock, Scotland, and John R. Bantick, Loughborough, England, assignors to Fisons Limited, London, England

Filed Mar. 6, 1980, Ser. No. 127,832
Claims priority, application United Kingdom, Mar. 20, 1979, 09835/79
Int. Cl.³ A61K *31/41, 31/35;* C07D *311/22, 257/04*
U.S. Cl. 424—269 **10 Claims**

1. The substituted chromones of the formula:



(I)

wherein R^1, R^2, R^3, R^4, R^5 and R^7, which may be the same or different, each represent hydrogen, hydroxy, alkyl or alkoxy of 1 to 6 carbon atoms, amino, alkanoyl or alkanoylamino of 2 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, halogen, or alkoxy of 1 to 6 carbon atoms substituted by phenyl,

X is an alkylene chain of 1 to 10 carbon atoms optionally substituted by a hydroxy group,

A is oxygen or is absent,

Q represents a straight or branched alkylene, alkenylene, or alkynylene group of 2 to 6 carbon atoms, and

D represents carboxy, 5-tetrazolyl or carboxamido-5-tetrazolyl,

and pharmaceutically acceptable salts thereof, and pharmaceutically acceptable esters and amides of those compounds where D is carboxy.

9. A pharmaceutical composition for treating disorders in which the slow-reacting substance of anaphylaxis is a factor which comprises an effective amount of at least one compound according to claim 1 in association with a pharmaceutically-acceptable adjuvant, diluent or carrier.

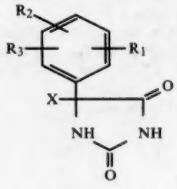
4,281,009

HYDANTOIN DERIVATIVES

Jin-emon Konishi, Musashino, Japan, assignor to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 5, 1978, Ser. No. 939,791
Claims priority, application Japan, Jun. 13, 1978, 53-71236
Int. Cl.³ A61K *31/415;* C07D *233/30, 213/46*
U.S. Cl. 424—273 R **22 Claims**

1. A hydantoin derivative of the general formula:



in which:

(a) when R_1 is hydroxy, and each of R_2 and R_3 is independently hydrogen,
X is C_1–C_3 alkyl, thienyl, or hydroxyphenyl;

(b) when R_1 is C_1–C_3 alkoxy, R_2 is halogen, and R_3 is hydrogen,
X is C_1–C_3 alkoxyphenyl; and

(c) when each of R_1, R_2 and R_3 is independently hydroxy,
X is trihydroxyphenyl p1 or a pharmaceutically acceptable salt thereof.

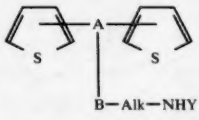
4,281,010

DITHIENYLALKYLAMINES AND PROCESS FOR THEIR PRODUCTION

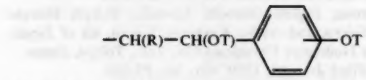
Axel Kleemann, Hanau; Ingomar Nubert; Fritz Stroman, both of Offenbach, and Klaus Thiemer, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 867,157, Jan. 5, 1978, Pat. No. 4,206,213. This application Jul. 12, 1979, Ser. No. 56,840
Claims priority, application United Kingdom, Jan. 12, 1977, 1121/77
Int. Cl.³ C07D *409/06*
U.S. Cl. 424—275 **17 Claims**

1. A medicament containing as an active ingredient in an amount sufficient to increase blood circulation a compound of the formula



where >A— B— has either the structure >C(OH)—CH_2— or the structure >C=CH, Alk is a C_1–C_5-alkylene group and Y is



where R is hydrogen or a C_1–C_4— alkyl group and T is hydrogen or a C_2—C_6—alkanoyl group or a salt thereof.

4,281,011

INSECTICIDAL N-METHYL-N-(BENZENE SULFONIC ACID METHYLAMIDE-N'-SULFENYL)-CARBAMIC ACID OXIME ESTERS

Peter Siegle, Cologne; Engelbert Kühle, Bergisch-Gladbach; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath-Steinenbrueck, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

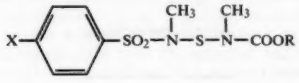
Division of Ser. No. 408,253, Oct. 19, 1973, Pat. No. 3,954,836. This application Jan. 27, 1976, Ser. No. 652,929

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1972, 2254359

Int. Cl.[3] **C07C** *145/04, 119/00;* **A01N** *9/12*

U.S. Cl. 424—277 **11 Claims**

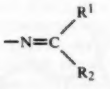
1. A N-sulfenylated carbamate of the formula



in which

X is halogen, C_1–C_6 alkyl or hydrogen, and

R is a benzodioxolanyl or indanyl radical optionally carrying at least one alkyl, alkenyl, alkynyl, alkoxy, alenoxy, alkynoxy, alkylmercapto, alkenylmercapto, alkynylmercapto, dialkylamino, trihalogenomethyl, halogeno, nitro, nitrile, cycloalkyl, formamidino, dioxanyl or dioxolanyl radical; phenyl or naphthyl carrying at least one dioxanyl or dioxolanyl radical; or an oxime radical of the formula



in which

R^1 and R^2 each individually is alkyl, alkoxy, alkylthio or alkoxycarbonyl, the alkyl moieties of R^1 and R^2 optionally being linked to one another.

10. A method of combating insects or acarids which comprises applying to the insects or acarids or to a habitat thereof an insecticidally or acaricidally effective amount of a compound according to claim **1**.

4,281,012

[4H]-1,3-BENZODIOXIN-2-CARBOXYLIC ACIDS

Daniel Humbert, Fontenay-sous-Bois; Francois Clemence, Paris, and Michele Dagnaux, Fontenay-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

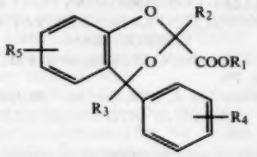
Filed Apr. 30, 1979, Ser. No. 34,432

Claims priority, application France, May 3, 1978, 78 13095; May 3, 1978, 78 13096

Int. Cl.[3] **A61K** *31/335;* **C07D** *319/08*

U.S. Cl. 424—278 **15 Claims**

1. A compound selected from the group consisting of racemates and optically active isomers and mixtures of isomers of a compound of the formula



wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, alkali metal, alkaline earth metal, aluminum, —NH_4 and non-toxic, pharmaceutically acceptable organic amines, R_2 is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms, R_4 and R_5 are individually selected from the group consisting of hydrogen, halogen, trifluoromethyl, cyclohexyl, alkyl and alkoxy of 1 to 3 carbon atoms and p-chlorophenoxy and R_3 is selected from the group consisting of 2-propenyl, ethenyl, cyclohexyl, benzyl, alkyl of 1 to 5 carbon atoms and hydrogen with the proviso that when R_3 is alkyl, at least one of R_4 and R_5 is not hydrogen or halogen and when R_3 is hydrogen, at least one of R_4 and R_5 is not hydrogen, halogen or trifluoromethyl.

6. An hypolipemiant composition comprising an hypolipemiantly effective amount of at least one compound of claim **1** and an excipient.

11. A method of inducing hypolipemic activity in warm-blooded animals comprising administering to warm-blooded animals an hypolipemiantly effective amount of at least one compound of racemates and optically active isomers and mixtures of isomers of a [4H]-1,3-benzodioxin-2-carboxylic acid compound of claim **1**.

4,281,013

ANTIATHEROSCLEROTIC USE OF KHELLIN AND KHELLININ

Paul E. Schurr, Portage, and Charles E. Day, Fulton, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 13, 1979, Ser. No. 11,815

Int. Cl.[3] **A61K** *31/35*

U.S. Cl. 424—283 **6 Claims**

1. A method of treating or preventing serum lipid associated atherogenic hyperbetalipoproteinemia in a human suffering from or susceptible to the development of an atherosclerotic disease which comprises:

administering systemically to said human an amount of khellin or khellinin effective to significantly reduce levels of atherogenic serum betalipoproteins.

2. A method of reversing serum lipid associated atherosclerotic lesions in a human which comprises:

administering systemically to said human an amount of khellin or khellinin effective to significantly reduce levels of atherogenic serum betalipoproteins.

3. A method of reversing serum lipid associated atherosclerotic lesions in a human which comprises:

administering systemically to said human an amount of khellin or khellinin effective to selectively enhance levels of antiatherogenic serum alphalipoproteins.

4. A method of treating a human suffering from or susceptible to the development of a serum lipid associated atherosclerotic disease which comprises:

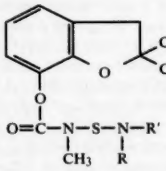
administering systemically to said human an amount of khellin or khellinin effective to significantly reduce levels of atherogenic serum betalipoproteins.

4,281,014
STABILIZED COMPOSITIONS CONTAINING N-AMINOSULFENYLATED DERIVATIVES OF CARBOFURAN

Jerome Yaffe, El Cerrito, Calif., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 4, 1980, Ser. No. 156,290
Int. Cl.³ A01N *25/22;* **C07D** *307/86;* **A01N** *47/18*
U.S. Cl. 424—285 **9 Claims**

1. A stabilized insecticidal composition comprising about 0.2 to 98% by weight insecticidal N-aminosulfenyl derivative of carbofuran of the formula



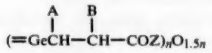
wherein R and R′ may be the same or different, and each is alkyl of 1 to 8 carbon atoms which may contain an —O—, —S—, or —NR″— linkage (where R″ is lower (1 to 4 carbons) alkyl, benzyl, or phenyl), cycloalkyl of 3 to 6 carbon atoms, or benzyl, or R and R′ taken together with the nitrogen form a heterocyclic ring of 5 to 8 members which may contain an —S—, or —NR″—, which heterocyclic ring may be substituted by one or more alkyl, aralkyl, aryl, or alkoxy groups, and about 0.01 to 20% by weight epoxide compound.

4,281,015
GERMANIUM-CONTAINING ORGANIC POLYMER AND IT'S USE IN THE TREATMENT OF PSYCHONEUROLOGICAL DISORDERS

Akira Ishikawa, Tokyo; Yukihito Ishida, Fujisawa; Shiro Ikegami, Funabashi; Hiroshi Satoh, Tokyo; Ryuichi Sato, 2310, Kamikoizumi, Oizumicho, Ora-gun, Gunma-ken; Setsuo Tomisawa, Tokyo, and Shigeru Toyoshima, Funabashi, all of Japan, assignors to Ryuichi Sato, Gunma, Japan

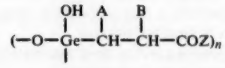
Division of Ser. No. 12,151, Feb. 14, 1979. This application Feb. 29, 1980, Ser. No. 125,876
Claims priority, application Japan, Mar. 1, 1978, 53-21992; Mar. 1, 1978, 53-21993
Int. Cl.³ A61K *31/28*
U.S. Cl. 424—287 **6 Claims**

1. A method of treating an animal suffering from a psychoneurological disorder, which comprises, administering to said animal an effective amount to relieve said suffering, of a polymer selected from the group consisting of those of the formulae:



(III)

and



(IV)

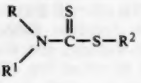
wherein A represents one of a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, —COOH, —COOR (wherein R is an alkyl group having 1 to 3 carbon atoms),
B represents one of a hydrogen atom and an alkyl group having 1 to 3 carbon atoms; Z represents one of a hydroxy group, an alkoxy group having 1 to 3 carbon atoms and an alkyl group having 1 to 3 carbon atoms; and n is an integer greater than 3, inclusive.

4,281,016
NEMATOCIDAL COMPOSITION

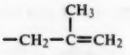
Yasuhisa Kurosu, Fujimi; Hiroshi Kawada, Tokyo; Haruki Kanasugi, Tokyo, and Akiko Kashima, Tokyo, all of Japan, assignors to Hodogaya Chemicals Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,550
Claims priority, application Japan, Jul. 18, 1978, 53-86706; Feb. 24, 1979, 54-20233
Int. Cl.³ A01N *47/10;* **C07C** *155/08*
U.S. Cl. 424—300 **8 Claims**

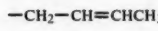
1. A nematocidal composition containing as active ingredient(s) dithiocarbamate compound(s) represented by the general formula,



wherein R and R^1 are respectively a lower alkyl group, and R^2 is a group of $-CH_2CH=CH_2$,



or

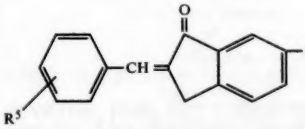


4,281,017
PHARMACEUTICALLY ACTIVE INDANE DERIVATIVES

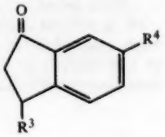
William R. N. Williamson, Slough, England, assignor to Lilly Industries Limited, London, England

Filed Sep. 10, 1979, Ser. No. 74,221
Claims priority, application United Kingdom, Sep. 16, 1978, 37121/78
Int. Cl.³ C07C *59/86, 69/738;* **A61K** *31/235, 31/19*
U.S. Cl. 424—308 **7 Claims**

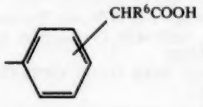
1. A compound of the formula



or



wherein
R^3 is;



R^4 is H;
R^5 is H, halogen or (C_1-C_4)alkyl; and

R^6 is H or (C_1–C_4)alkyl; or a pharmaceutically acceptable salt or a (C_1–C_4)alkyl ester thereof.

4,281,018

NOVEL 4-[(CARBOXYL- AND SULFAMYL-SUBSTITUTED ALKYL)-AMINO]BENZOIC ACIDS AND ANALOGS

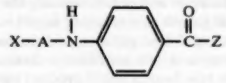
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 895,574, Apr. 12, 1978, Pat. No. 4,230,628. This application May 16, 1980, Ser. No. 150,511

Int. Cl.³ A61K *31/245, 31/195*

U.S. Cl. 424—310 **7 Claims**

1. The method of treating hyperlipidemia and hyperlipoproteinemia and/or altering the lipoprotein pattern in a mammal comprising administration to said mammal of an effective lipid-altering amount of a compound of the formula:



wherein X is selected from the group consisting of carboxy, lower alkoxycarbonyl and aryloxycarbonyl; A is an unbranched or branched alkylene group optionally saturated or mono- or poly-unsaturated, and containing or not containing a cycloalkyl group, represented by for formula $C_nH_{2(n-p)}$ with n being an integer from 8 to 18, inclusive, and p being an integer from 0 to 5, inclusive; and Z is selected from the group consisting of hydroxy, lower alkoxy, lower alkoxyalkoxy, di(lower alkyl)aminoalkoxy, (mono- or poly-hydroxy)lower alkoxy, allyloxy and substituted or unsubstituted benzyloxy; and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof.

4,281,019

4-[(UNSATURATED OR CYCLOPROPYLATED ALKYL)AMINO]PHENYL COMPOUNDS USEFUL AS HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC AGENTS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

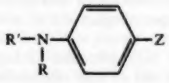
Filed Feb. 1, 1979, Ser. No. 8,641

The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.³ A61K *31/135, 31/195, 31/24, 31/415, 31/44;* **C07C** *87/62, 95/00*

U.S. Cl. 424—330 **24 Claims**

1. The method of inhibiting atherosclerotic lesion development in a mammal comprising administering to said mammal an effective lesion-development inhibiting amount of a compound of the formula:



wherein Z is

wherein J is hydrogen; R is selected from the group consisting of hydrogen, or a group convertible in vivo thereinto, such as methyl; and R' is a branched or unbranched mono- or polyunsaturated or cyclopropylated C_3–C_{22} alkyl group; and the pharmaceutically acceptable non-toxic acid addition and cationic salts thereof; and mixtures thereof.

4,281,020

DEUTERATED ANALOGUES OF METHOXYFLURANE USEFUL AS AN ANESTHETIC

Leslie P. McCarty, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 16,644, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 961,158, Nov. 16, 1978, abandoned, which is a division of Ser. No. 759,943, Jan. 17, 1977, Pat. No. 4,153,636. This application Feb. 11, 1980, Ser. No. 120,404

Int. Cl.³ A61K *31/08*

U.S. Cl. 424—342 **5 Claims**

1. The process for anesthetizing an animal which comprises administering to said animal an effective concentration of the compound 2,2-dichloro-1,1-difluoro-1-methoxy-d_3-ethane-d or 2,2-dichloro-1,1-difluoro-1-methoxy-d_3-ethane as a general inhalation anesthetic.

4,281,021

METHOD OF ACCELERATING COLORING AND SWEETENING OF CITRUS FRUITS

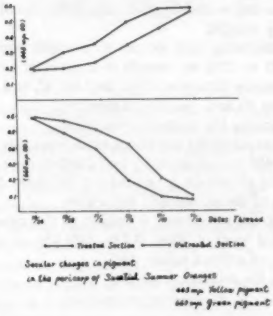
Chiyokichi Iizuka, and Hiroaki Maeda, both of Chiba, Japan, assignors to Noda Shokkin Kogyo Kabushiki Gaisha, Noda, Japan

Filed Aug. 15, 1979, Ser. No. 66,837

Claims priority, application Japan, May 10, 1979, 54/57367

Int. Cl.³ A23L *1/272*

U.S. Cl. 426—61 **4 Claims**



1. A method for accelerating the coloration and increasing the sugar content of citrus fruits which comprises applying to the citrus fruit plants a dilute, aqueous solution of the active ingredients obtained by water extraction of the mycelium nutrient medium and tissue medium of an edible fungus of the genus Basidiomycetes, concentrating, and subsequent aqueous dilution thereof to form said dilute, aqueous extract containing said active ingredients.

4,281,022

METHOD OF COOKING THIN MEATS IN A MICROWAVE OVEN

Ronald G. Buck, Burnsville, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 829,075, Aug. 30, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,696

Int. Cl.³ A23L *1/31;* **H05B** *9/06*

U.S. Cl. 426—233 **5 Claims**

1. A method for cooking thin meat bodies in a microwave oven having means for measuring the humidity of the microwave oven cooking cavity environment associated therewith comprising the steps of:

(a) energizing a microwave energy source to provide microwave energy to said cooking cavity whereby at least a portion of said energy is absorbed by a thin meat body located in said cooking cavity;

(b) measuring the humidity of said cooking cavity environment at a plurality of time-spaced intervals while said thin meat body is being heated and storing said measurements in a microprocessor forming part of the controls for said oven;
(c) calculating the slope of a humidity-time curve described by said measurements;
(d) comparing said calculated slope with the slope of a characteristic humidity-time curve stored in said microprocessor and obtaining from said comparison the time when said thin meat body will reach thermal equilibrium at 100° C.;
(e) calculating in said microprocessor the time said thin meat body will reach a preselected doneness as a predetermined percentage of said thermal equilibrium time; and,
(f) de-energizing said microwave energy source at said calculated doneness time.

4,281,023

SOLUBLE COFFEE PROCESS

Richard R. Pyves, Pointe Claire, Canada, assignor to General Foods Limited, Toronto, Canada

Filed Feb. 19, 1980, Ser. No. 122,226
Claims priority, application Canada, Nov. 28, 1979, 342742
Int. Cl.³ A23F 5/50
U.S. Cl. 426—385 **7 Claims**

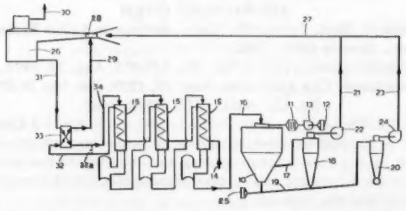
1. A method for producing a soluble coffee product comprising the steps of:
(a) obtaining an aqueous extract of roasted coffee, said extract having a soluble solids concentration of from 12% to 30% by weight,
(b) concentrating said extract to a solids concentration of from 35 to 55% by weight in a vacuum evaporator at a temperature between 35° C. and 80° C. and a pressure of between 40 and 360 mm of mercury,
(c) condensing the vacuum evaporate,
(d) vacuum stripping the condensed evaporate at a pressure below 400 mm of mercury and condensing said strippings in order to obtain a condensate of from 5 to 15% by weight of the condensed evaporate,
(e) adding the condensed stripping to the concentrated extract at a level of about 0.2 to 0.60 kgs. of condensate to one kg. of extract solids, and
(f) drying the mixture from step (e).

4,281,024

METHOD FOR SPRAY DRYING LIQUID PRODUCTS

Georg H. H. Hauberg, Allerod; Jens Krag, Copenhagen, and Jan Pisecky, Taastrup, all of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Continuation of Ser. No. 925,846, Jul. 18, 1978, abandoned, which is a division of Ser. No. 837,876, Sep. 29, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,508
Claims priority, application Denmark, Sep. 30, 1976, 4416/76
Int. Cl.³ A23C 1/04
U.S. Cl. 426—471 **10 Claims**



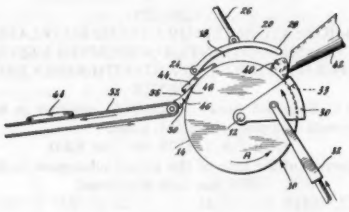
1. A method of spray drying a bacteria liable perishable solids containing liquid product comprising
passing said liquid product along a flow path defined in a preheater of a multistage evaporator so as to heat said liquid product to a pasteurization temperature,
concentrating said liquid product in said evaporator,
spraying said concentrated liquid product having passed said evaporator into a spray drying chamber,
supplying drying gas into said spray drying chamber,
passing exhaust gas phase from said spray drying chamber into a gas scrubber to remove solid particles from said gas phase, deriving at least part of said pasteurized liquid product from the flow path of said evaporator at a first location and immediately thereafter passing it into said gas scrubber where it is used as washing liquid prior to spraying said liquid product part into said spray drying chamber,
cooling said heated liquid product part in a heat exchanger prior to passing it into said gas scrubber from said evaporator, and
returning said washing liquid from said gas scrubber to the flow path of said evaporator at a second location adjacent to said first location and at substantially the same temperature as that at which said washing liquid is removed from said flow path of the evaporator, said washing liquid being returned from said gas scrubber is heated in said heat exchanger by said heated liquid product part derived from said evaporator and being passed to said gas scrubber.

4,281,025

METHOD FOR SHAPING AND PRECOOKING TORTILLA DOUGH

John G. Longenecker, Ozone Park, N.Y., assignor to Roberto Gonzalez Barrera, Monterrey, Mexico

Division of Ser. No. 26,368, Apr. 2, 1979, Pat. No. 4,241,648, which is a continuation-in-part of Ser. No. 849,890, Nov. 9, 1977, abandoned. This application May 23, 1980, Ser. No. 152,585
Int. Cl.³ A21D 6/00
U.S. Cl. 426—496 **3 Claims**

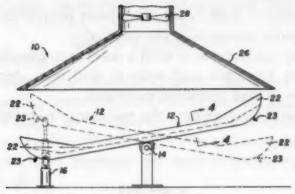


1. A method of forming tortillas comprising the steps of
inserting a ball of tortilla dough into a region between a rotatable forming base having a heatable arcuate outer surface and an associated compression plate having a heatable arcuate surface which is configured so as to be substantially equidistant throughout to the opposing portion of said outer surface of said base when said surfaces are juxtaposed spaced-apart at a distance desired for forming tortillas therebetween, said plate being moveable with respect to said base into said juxtaposed spaced-apart relationship and out of said relationship with the end of said plate which the advancing base surface first passes under when said base rotates in a desired direction being moveable away from said base while the other end of said plate remains pivotally fixed in substantially the same spaced-apart position with respect to said base,
moving said plate into said juxtaposed spaced-apart relationship so that said ball is compressed between said plate and said base,
moving said plate out of said relationship,
and rotating said base in said desired direction to cause the compressed dough to move out of said region between said plate and said base.

4,281,026
PREPARING FRUIT JUICE POWDER

Lucio Reale, 1827 - 46th St., SE, Calgary, Alberta, Canada T2B 2J9

Filed Jun. 26, 1979, Ser. No. 52,231
Int. Cl.[3] A23L *2/10*
U.S. Cl. 426—599 8 Claims



1. A process for producing a fruit preparation from a natural fruit juice, the process comprising the steps:

removing water from the juice by flowing the juice in a thin film on a heated, reciprocable, inclinable surface to reduce the water content to 10 to 25% by volume to produce a first product;

adding a crystalline modifying agent selected from the group consisting of sugars or pectin in a quantity sufficient to enable solidification of the preparation, to the first product and blending said modifying agent and said first product while heating them by blowing air on them to produce a second product; and

continuing said heating and blending until the water content of said second product is in the range of 1 to 15% by volume to produce said fruit preparation.

4,281,027
PROCESS FOR MANUFACTURING COCOA POWDER

Mitsuyori Inoue, Chuoku Tokyoto, and Akira Yamabe, Chibashi, both of Japan, assignors to Iwatani Sangyo Kabushiki Kaisha, Chuoku Tokyoto, Japan

Filed Apr. 2, 1979, Ser. No. 26,385
Claims priority, application Japan, Nov. 10, 1978, 53/139014; Nov. 17, 1978, 53/142573
Int. Cl.[3] A23G *1/00*
U.S. Cl. 426—631 28 Claims

1. A process for manufacturing cocoa powder using cocoa shells comprising the steps of:

a. separating the cocoa shells from cocoa beans;

b. extracting astringency from said cocoa shells;

c. freezing said cocoa shells in liquid nitrogen;

d. pulverizing said frozen cocoa shells at a temperature not greater than −30° C.; and

e. recovering the extracted, frozen and pulverized cocoa shells for use as a cocoa powder.

4,281,028
MALTULOSE-CONTAINING SYRUPS

Raoul Walon, Brussels, Belgium, assignor to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 5,524, Jan. 22, 1979, Pat. No. 4,217,413. This application Feb. 6, 1980, Ser. No. 118,891
Claims priority, application United Kingdom, Jan. 23, 1978, 2653/78
Int. Cl.[3] A23L *1/09*
U.S. Cl. 426—658 1 Claim

1. A sweet syrup composition derived from starch having a dextrose equivalent value within the range of 60 to 90 and having the following saccharide composition, by weight dry basis:

from 20% to 40% dextrose

from 20% to 40% levulose

from 10% to 60% maltulose

from 0% to 25% maltose

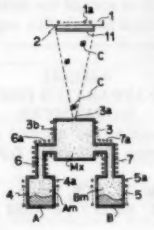
from 0% to 20% saccharides having a degree of polymerization of greater than 2,

the total ketose content, which is principally levulose plus maltulose, being within the range of 40% to 80%, wherein said syrup is non-crystallizing at a concentration of 75% solids.

4,281,029
METHOD OF COATING WITH A STOICHIOMETRIC COMPOUND

Toshinori Takagi, 10-3 Tomooka 2-chome, Nagaokakyo-shi, Kyoto-fu; Kiyoshi Morimoto, and Hiroshi Watanabe, both of Futaba Denshi Kogyo K.K. 629, Oshiba, Mobara-shi, Chiba-ken, all of Japan

Division of Ser. No. 877,502, Feb. 13, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,220
Claims priority, application Japan, Mar. 10, 1977, 52-25494
Int. Cl.[3] B05D *3/06;* C23C *13/08;* H01L *7/36*
U.S. Cl. 427—38 4 Claims



1. A method of producing compounds which comprises the steps of separately heating and vaporizing a plurality of substances-to-be-vaporized containing the component elements of a desired compound and placed in a plurality of crucibles respectively to form vapors of said substances, the degree of heating of said crucible being proportional to the vapor pressure of the substance contained therein, feeding said vapors into a heated mixing chamber in a stoichiometric proportion and mixing said vapors therein to form a mixed vapor, jetting said mixed vapor through an aperture in said mixing chamber and into a vacuum region to form clusters, and making said clusters impinge on a substrate under the influence of injection energy given to said clusters when jetted, wherein during the feeding of said vapors into said mixing chamber, said vapors are not initially directed towards said aperture.

4,281,030
IMPLANTATION OF VAPORIZED MATERIAL ON MELTED SUBSTRATES

William T. Silfvast, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 12, 1980, Ser. No. 149,234
Int. Cl.[3] C23C *13/00, 13/12*
U.S. Cl. 427—42 19 Claims

1. A method of depositing material from a particle flux onto a collector substrate which comprises the steps of:

disposing said collector substrate in the path of said particle flux;

characterized in that

said method further includes the step of directing a pulse of radiation from an energy source to impinge upon and melt an area of the surface of said collector substrate before said particle flux impinges thereon.

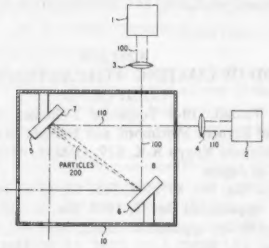
12. An apparatus for depositing material from a target (8) onto a collector substrate (5) which comprises:

an evacuated chamber (10) within which said target and said collector substrate are disposed;

a first source (1) of first radiation;

means (3) for applying said first radiation to said target to provide a particle flux of material from said target, which particle flux travels toward said collector substrate;

a second source (2) of second radiation; and



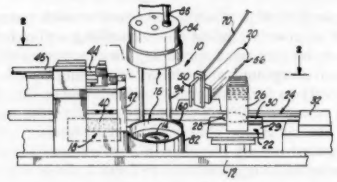
means (4) for applying said second radiation to said collector substrate to melt an area of the surface of said collector substrate before said particle flux impinges thereon.

4,281,031

METHOD AND APPARATUS FOR PROCESSING WORKPIECES

Gary Hillman, Livingston, and Michael J. Devico, Madison, both of N.J., assignors to Machine Technology, Inc., Whippany, N.J.

Filed Jul. 25, 1979, Ser. No. 60,337
Int. Cl.[3] B05D *3/14;* **B05B** *15/06*
U.S. Cl. 427—45.1 **22 Claims**



1. In a method of processing a substrate which is useful in the manufacture of semiconductor devices, said process including one or more non-baking steps, such as scrubbing, coating, developing, rinsing or drying, and a baking step, the improvement wherein all of said non-baking and baking steps are carried out at a single work station, said improvement further comprising the steps of providing said substrate on a work support which is located at said work station and selectively and sequentially performing at least one of said non-baking steps and said baking step on said substrate while said substrate is continuously maintained on said work support, whereby said baking step may be performed before or after one or more of said non-baking steps or between two or more of said non-baking steps.

9. Apparatus for processing a substrate which is useful in the manufacture of semiconductor devices, said apparatus performing one or more non-baking steps, such as scrubbing, coating, developing, rinsing or drying, and a baking step, the improvement wherein all of said non-baking and baking steps are carried out at a single work station, said improvement further comprising a work support provided at said work station and performing means for selectively and sequentially performing at least one of said non-baking steps and said baking step on said substrate while said substrate is continuously maintained on said work support, whereby said baking step may be performed before or after one or more of said non-baking steps or between two or more of said non-baking steps.

4,281,032

METHOD FOR COATING MOLD

Barnee M. Escott, Austin, Tex.; Jerald J. Reynolds, Swanton, and William C. Ward, Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,475
Int. Cl.[3] B29C *1/04*
U.S. Cl. 427—135 **5 Claims**

1. A method of improving the release properties of a mold for plastic parts comprising the steps of:

contacting carnauba wax with a solvent to dissolve the para methoxy cinnamic acid ester in said wax, decanting the solution of said dissolved ester and

spraying said solution onto the mold prior to molding of said parts.

4,281,033

FLUORESCENT PENETRANT SYSTEM

Adolf Mlot-Fijalkowski, Lincolnwood, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Mar. 12, 1980, Ser. No. 129,726
Int. Cl.[3] B05D *7/24;* **C09K** *11/00*
U.S. Cl. 427—157 **7 Claims**

1. A method for the non-destructive testing for flaws on the surface of a workpiece which comprises:

applying a penetrant composition including a fluorescent dye in a liquid vehicle onto said surface to permit said penetrant to become trapped in said flaws,

removing excess penetrant from said surface while leaving penetrant entrapped in said flaws,

applying a remover composition to said surface, said remover composition including a solvent, at least one surface active agent dissolved in said solvent, and a fluorescent material which is more readily soluble in said liquid vehicle than in said solvent, whereby said fluorescent material is preferentially absorbed in the penetrant entrapped in said flaws to thereby enhance the fluorescence of the entrapped penetrant, and

applying a developer to the surface to draw the entrapped penetrant to the surface of the workpiece.

4,281,034

PLATING ON PLASTICS BY SOFTENING WITH TRICHLOROETHYLENE AND METHYLENE CHLORIDE BATH

Raichur S. Narayan, Schaumburg, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Apr. 3, 1980, Ser. No. 137,024
Int. Cl.[3] C23C *3/00, 7/00;* **C25D** *5/56*
U.S. Cl. 427—191 **20 Claims**

1. A process for plating a metal on an article fabricated from a resin susceptible to softening of the resin upon contact of the resin with trichloroethylene or with trichloroethylene and methylene chloride, said process comprising the steps of

(a) immersing the article in a bath being agitated as the article is immersed therein and consisting essentially of

(1) approximately 90 parts of trichloroethylene by volume,

(2) approximately from 9 to 10 parts of ethanol by volume, and

(3) approximately from 0 to 1 part of methylene chloride by volume, wherein the bath contains approximately 1 part of methylene chloride if the resin is polypropylene,

(b) contacting the article with the metal as a powder of particle sizes of approximately from 50 to 150 microns, and

(c) dipping the article in a bath being agitated as the article is dipped therein and consisting essentially of trichloroethylene, ethanol, and methylene chloride in proportions used in the bath for step (a).

4,281,035

MARKING COMPOSITION AND METHOD OF USING SAME

Peter F. Hawthorne, Sutton Coldfield, and Peter J. Rollin, Tamworth, both of England, assignors to Foseco International Limited, Birmingham, England

Filed Feb. 22, 1979, Ser. No. 13,901

Claims priority, application United Kingdom, Feb. 22, 1978, 6996/78

Int. Cl.³ B41M *1/28*

U.S. Cl. 427—199 8 Claims

1. A composition in powder form for marking a hot metal object, consisting essentially of titanium dioxide as a refractory pigment in a major proportion by weight and trisodium polyphosphate as a fusible adhesion agent for adhering said pigment to said object said pigment and said adhesion agent being below 60 mesh.

5. A method of marking a hot metal object comprising applying to a surface of said object a composition, in powder form and suspended in a carrier gas, which composition consists essentially of titanium dioxide as a refractory pigment in a major proportion by weight and trisodium polyphosphate as a fusible adhesion agent for adhering said pigment to said object, and allowing said composition to adhere to the object to form a marking on said object said pigment and said adhesion agent being below 60 mesh.

4,281,036

METHOD FOR COATING FINE PARTICULATE EXPANDABLE STYRENE POLYMERS

Horst Leithäuser; Heinz Osterhoff, and Karl Trukenbrod, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,829

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932321

Int. Cl.³ B32B *27/02*

U.S. Cl. 427—222 13 Claims

1. In a method for coating fine particulate expandable styrene polymers with dispersion of coating materials, the improvement comprising:

(a) introducing the fine particulate expandable styrene polymers into a closed mixing vessel;

(b) reducing the pressure in the mixing vessel below atmospheric;

(c) preparing dispersions of the coating materials and heating the dispersions to about 30° C.; and

(d) aspirating the heated dispersions of the coating materials into the mixing vessel while simultaneously mixing the dispersions with the particulate styrene polymers to form a coating thereon and drying the coated particles.

4,281,037

CLEANING AND PRIMING COMPOSITION CONTAINING TITANIUM ACETYLACETONATE AND METHOD

Hun R. Choung, Dayton, Ohio, assignor to DAP, Inc., Tipp City, Ohio

Filed Aug. 8, 1980, Ser. No. 176,385

Int. Cl.³ C11D *7/50*; B05D *3/10*

U.S. Cl. 427—407.3 16 Claims

1. A composition useful for cleaning and priming surfaces comprising a solution of:

(a) 0.1 to 10 weight percent titanium acetylacetonate,

(b) 20 to 50 weight percent of alkanol having 1 to 4 carbon atoms,

(c) 20 to 50 weight percent of alkanone selected from the group consisting of methylethylkeytone, methylisobutylketone, acetone, and mixtures thereof, and,

(d) 5 to 40 weight percent water.

4,281,038

NON-CONDUCTIVE SUBSTRATE FOR A PRINTED CIRCUIT AND METHOD OF MANUFACTURE

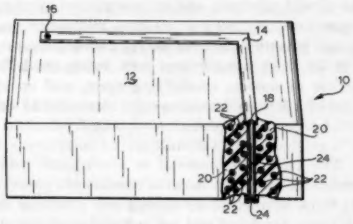
Peter Ambros, Hohenroth, and Hermann Geyer, Oberbach, both of Fed. Rep. of Germany, assignors to Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co., Neustadt, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,154

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854385

Int. Cl.³ C08K *9/06*

U.S. Cl. 428—131 13 Claims



1. An electrically non-conductive base for a printed circuit, which comprises:

a high temperature resistant thermoplastic selected from the group consisting of polyphenyloxide, polyphenylsulfide, polyimide and polyethersulfone having dispersed therein a plurality of discrete particles of a material selected from the group consisting of iron, copper, compounds of iron, compounds of copper and mixtures thereof;

said particles bearing a coating of a bonding assistant selected from the group consisting of a silicone resin, an organic silane and a silane ester.

4,281,039

METHOD FOR MAKING A VINYL CHLORIDE RESIN SHEET AND SHEET FORMED BY SAID METHOD

Nobuo Miura, Kashiwa, and Yuichi Akiba, Tokyo, both of Japan, assignors to Lonseal Corporation, Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,922

Claims priority, application Japan, Oct. 6, 1978, 53-123757

Int. Cl.³ B29D *27/00*

U.S. Cl. 428—159 30 Claims

1. A method for making a vinyl chloride resin sheet having a relief pattern thereon, said method comprising the steps of:

(a) providing an open celled vinyl chloride resin sheet;

(b) printing a portion of said sheet with a composition comprising a cross-linkable compound in accordance with said pattern;

(c) drying said printed sheet;

(d) heating said dried sheet to a temperature higher than its softening temperature whereby the open celled unprinted portion of said sheet is depressed and whereby said printed pattern remains open celled and stands in relief with respect to said depressed portion.

6. The sheet formed by the method of any one of claims 1, 2, 3, 4, or 5.

4,281,040

ABRASION RESISTANT COATING FOR FOAMED PLASTIC SUBSTRATES

Edgardo Santiago, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 33,279, Apr. 25, 1978, Pat. No. 4,231,911, which is a continuation of Ser. No. 926,189, Jul. 20, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,448

Int. Cl.[3] B32B *3/00, 5/18*

U.S. Cl. 428—195 5 Claims

1. A composite material consisting of a rigid or semi-rigid foamed plastic substrate, at least one layer of decorating and/or printing ink applied over at least some selected surface areas of said substrate, and an overcoat of synthetic varnish composition comprising an aqueous mixture of polyurethane resin and polyethylene resin having a solids ratio ranging from 1:9 to 1:1, said polyethylene resin being emulsified with a non-ionic or anionic emulsifying agent, and up to 30% by weight of a low molecular weight alcohol, said composition adapted to provide a protective coating for the said decorated and/or printed plastic substrate and be co-extensive therewith.

4. The composite material in accordance with claim 1, wherein said composite material consists of a generally rectangular blank adapted to be formed into a tubular sleeve, said blank being devoid of said ink and said overcoat at opposing marginal ends to facilitate fabrication into said tubular sleeve.

4,281,041

HARD SOLDERABLE METAL LAYERS ON CERAMIC

Wolfgang Koehler, Alzenau, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 122,053

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906888

Int. Cl.[3] B32B *9/00, 9/06, 15/04*

U.S. Cl. 428—336 17 Claims

1. A product suitable for applying hard solder comprising a ceramic base and a coating on the surface thereof of an alloy consisting essentially of (1) palladium with 20 to 70 weight percent of a member of the group consisting of cobalt, iron and a mixture of cobalt and iron or (2) an alloy containing (1) and an additionally 3 to 20 weight percent of a member of the group consisting of chromium, manganese, titanium and mixtures thereof.

4,281,042

POLYESTER FIBERFILL BLENDS

Georges Pamm, Geneva, Switzerland, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 30, 1979, Ser. No. 71,196

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—361 7 Claims

1. A polyester fiberfill blend consisting essentially of (a) from about 70 to about 90% by weight of crimped polyester staple fiber and (b) complementally, to total 100% by weight, from about 10 to about 30% of crimped staple binder fiber of a polymer having a melting point lower than that of said polyester fiber, wherein from about 25 to about 75% by weight of said polyester fiber is slickened with a cured polysiloxane coating and the remainder of said polyester fiber is unslickened.

4,281,043

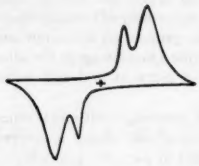
POLYMODAL MAGNETIC RECORDING MEDIA AND COMPOSITIONS USEFUL THEREIN

Robert J. Deffeyes, Arlington, Tex., assignor to Graham Magnetics, Inc., North Richland Hills, Tex.

Continuation-in-part of Ser. No. 411,253, Oct. 31, 1973, and a continuation-in-part of Ser. No. 734,605, Oct. 21, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 859,962

Int. Cl.[3] B22F *3/00;* C04B *35/64;* H01F *1/04, 1/14*

U.S. Cl. 428—457 27 Claims



1. A polymodal ferromagnetic powder composition formed of at least two populations of ferromagnetic particles of substantially different coercivities wherein a first said population is so selected that it can be magnetically switched at a magnetic field intensity at which a second population of said composition is not switched wherein no two populations adjacent each other, with respect to coercivity value, will both have their coercivity substantially influenced by shape anisotropy; and wherein each said ferromagnetic particle population is a material characterized by a maximum coercivity ratio of about 1.5:1 between different axes of said particle population and wherein a nonintegrated dM/dt curve of the magnetic powder formed of said populations will exhibit a valley between two adjacent peaks equal to at least one-half the average distance from the base line to top of said two peaks.

4,281,044

ADHESION OF PHENOLICS TO COPPER

Linwood A. Walters, Storrs, and J. Mark Mersereau, Brooklyn, both of Conn., assignors to Rogers Corporation, Rogers, Conn.

Continuation-in-part of Ser. No. 844,293, Oct. 21, 1977, abandoned, and a continuation-in-part of Ser. No. 844,297, Oct. 21, 1977, abandoned. This application Jun. 29, 1979, Ser. No. 53,533

Int. Cl.[3] B32B *15/08, 27/42*

U.S. Cl. 428—460 9 Claims

1. An article of manufacture comprising:

molded body means, said molded body means being formed from a material consisting essentially of a thermosetting phenolic resin molding compound and 0.005 to 1.0 weight percent sulfur in elemental form; and

a copper element in contact with and directly adhered to said molded body means.

4,281,045

MULTI-LAYER EXTRUDED ARTICLE

Takehiko Sumi; Yoshinobu Oshige; Yoshio Koike, and Kazuya Matsumoto, all of Kyoto, Japan, assignors to Kyoraku Co., Ltd., Kyoto, Japan

Filed Nov. 29, 1979, Ser. No. 98,891

Int. Cl.[3] B32B *27/30, 27/32*

U.S. Cl. 428—516 7 Claims

1. A multi-layer extruded article comprising a gas-barrier layer and a polyolefin layer laminated on at least one of the opposite sides of the gas-barrier layer, the gas-barrier layer being made of a mixture comprising (a) a saponification product of an ethylene-vinyl acetate copolymer having an ethylene content of from 25 to 50 mol percent and a saponification degree of not less than 90 percent (Saponification Product A), (b) a saponification product of an ethylene-vinyl acetate co-

polymer having an ethylene content of from 60 to 98 mol percent and a saponification degree of not less than 20 percent (Saponification Product B), and (c) a polyvinyl alcohol having an average polymerization degree of from 300 to 3000 and a saponification degree of not less than 70 percent, wherein the ratio of the amounts of the aforementioned two saponification products (A:B) is in the range of from 98:2 to 50:50 by weight and wherein the amount of the polyvinyl alcohol is in the range of from 5 to 100 parts by weight per 100 parts by weight of the total weight of the two saponification products (A and B).

4,281,046

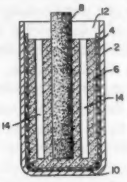
DRY CELL WITH ELECTROLYTE DISPERSION CHANNELS THROUGH THE CATHODE MIX

Charles Davis, Jr., Warrensville Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,587

Int. Cl.³ H01M *2/36*

U.S. Cl. 429—72 **14 Claims**



1. A dry cell comprising an anode; a cylindrical porous cathode depolarizer mix cake comprising an oxidic depolarizer, finely divided conductive material and an electrolyte; a separator disposed between said anode and said depolarizer mix cake; and a cathode collector rod longitudinally embedded in the center of said cathode depolarizer mix cake; the improvement wherein a plurality of spaced apart internal channels extends within the annular volume of the cathode depolarizer mix cake parallel to the cathode collector rod and terminates within the cathode depolarizer mix cake, and wherein the electrolyte in the cathode depolarizer mix cake is maximum at the vicinity of the wall area defining said channels.

10. A process for producing a dry cell comprising the steps:

(a) assembling within a cupped cylindrical container the active components of a dry cell including in addition to an anode, a cylindrical cathode depolarizer mix cake, a separator disposed between said anode and said cathode depolarizer mix cake and a cathode collector rod longitudinally embedded in said cathode depolarizer mix cake and protruding from the opened end of said container;

(b) providing a plurality of spaced apart channels extending within the annular volume of the cathode depolarizer mix cake parallel to the cathode collector rod and terminating within the cathode depolarizer mix cake;

(c) feeding a predetermined amount of an electrolyte solution into the longitudinal channels;

(d) placing a cover over the opening of said container; and

(e) sealing the cover to the container.

4,281,047

ZINC ELECTRODE MADE FROM A MODIFIED ZINC OXIDE FOR USE IN RECHARGEABLE ELECTROCHEMICAL CELLS

Ivan F. Danzig, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Jun. 11, 1980, Ser. No. 158,485

Int. Cl.³ H01M *10/30*

U.S. Cl. 429—217 **8 Claims**

1. A zinc electrode for use in rechargeable nickel-zinc electrochemical cells having greatly enhanced cycle life which comprises in admixture Zn, ZnO, HgO and an organic liquid binder produced via the reaction of diacetone acrylamide (DAA) and acrylic acid, which mixture has been formed into a paste and uniformly applied to a suitable current collector, wherein the ZnO component has an average surface area of about 3.5–4.0 m^2/gr and contains about 0.08 to 0.11 percent by weight Cd and about 0.05 to 0.08 percent by weight Pb, and has a generally rod-like particle structure.

4,281,048

BATTERY CATHODE AND METHOD OF MAKING SAME

Rudolph R. Haering, 647 Croydon Pl., Vancouver, British Columbia; James A. R. Stiles, 4133 Fairway Pl., North Vancouver, British Columbia, and Klaus Brandt, #318-1741 W. 10th Ave., Vancouver, British Columbia, all of Canada

Continuation-in-part of Ser. No. 33,718, Apr. 26, 1979, Pat. No. 4,245,017, which is a continuation-in-part of Ser. No. 935,361, Aug. 21, 1978, abandoned. This application Aug. 30, 1979, Ser. No. 71,399

The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.

Int. Cl.³ H01M *4/04, 4/58*

U.S. Cl. 429—218 **7 Claims**

1. A method of making a battery cathode having a predominantly molybdenum dioxide cathode-active material, said method comprising the steps of:

(a) baking finely divided molybdenum disulphide particles in an oxygen-containing atmosphere to convert substantially all of the molybdenum disulphide particles to finely divided molybdenum trioxide particles;

(b) further baking the molybdenum trioxide particles in a reducing atmosphere to convert substantially all of the molybdenum trioxide particles to finely divided molybdenum dioxide particles;

(c) applying a suspension of said molybdenum dioxide particles in a viscous liquid as a film on a selected substrate; and

(d) baking the substrate and applied film in an inert atmosphere to drive off substantially all of the viscous liquid.

4,281,049

COLOR SEPARATION TRANSPARENCY AND PROCESS FOR THE PREPARATION THEREOF

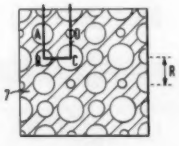
Roland Moraw, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,159

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826380

Int. Cl.³ G03C *5/04*

U.S. Cl. 430—9 **13 Claims**



1. A color separation transparency of one color selected from the primary colors, black and white, comprising:

a partial image in said one color, said transparency being transparent in areas representing said one color and opaque in areas representing all other colors;

said partial image in said one color being screened such that said partial image comprises a plurality of screen dots, the average apertures of said screen dots in each portion of said image corresponding approximately to the average density of said one color in said portion;

said screen dots being arranged in said partial image in a pattern of repeating units, each unit comprising an array

of more than two non-overlapping screen dots each having an aperture different from the other screen dots, the arrangement of the screen dots in all of said units being identical.

4,281,050

MIGRATION IMAGING SYSTEM

David A. Buckley; Roger N. Ciccarelli, both of Rochester, and Frank G. Belli, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 566,791, Jul. 21, 1966, abandoned. This application Jan. 29, 1970, Ser. No. 6,862

Int. Cl.³ G03G *17/00*

U.S. Cl. 430—41 **12 Claims**

1. A method of preparing migration imaging members which comprises:

providing a supporting substrate,

forming upon said substrate a layer of softenable material,

exposing the entire surface areas of said softenable layer to hardening radiation sufficiently to form on said surface a surface skin having a thickness not greater than about 0.3 micron and a viscosity during imaging of said member greater than that of the bulk of said softenable layer, and

forming contiguous the surface of said softenable layer spaced apart from said substrate and contacting said softenable layer, a fracturable layer of migration marking material.

4,281,051

THREE COLOR ELECTROSTATOGRAPHIC PROCESS

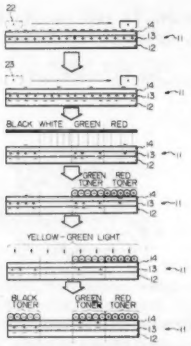
Katsuo Sakai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 96,729

Claims priority, application Japan, Nov. 29, 1978, 53-147430

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—42 **4 Claims**



1. An electrostatographic process comprising the steps of:

(a) providing a photoconductive material having a first photoconductive layer which is sensitive to light of a first color and insensitive to light of a second color and a second photoconductive layer which is sensitive to light of the second color and insensitive to light of the first color, the first and second photoconductive layers being insensitive to light of a third color;

(b) forming uniform electrostatic charges of opposite polarities at outer surfaces of the first and second photoconductive layers respectively;

(c) radiating a color light image comprising the first, second and third colors onto the material to form an electrostatic surface potential pattern having a high potential of a first polarity in an area radiated with the first color, a low potential of the first polarity in an area radiated with the third color and a potential of a second polarity in an area radiated with the second color;

(d) applying a toner of a fourth color charged to the first polarity to the material to form a first toner image in the area radiated with the second color;

(e) applying a toner of a fifth color charged to the second polarity to the material to form a second toner image in the area radiated with the first color while applying a bias voltage which prevents the toner of the fifth color from adhering to the area radiated with the third color;

(f) radiating the material with light of a color which causes one of the first and second photoconductive layers to photoconduct and increase the surface potential in the area radiated with the third color; and

(g) applying a toner of a sixth color charged to the second polarity to the material to form a third toner image in the area radiated with the third color;

step (a) further comprising providing substrate, the first photoconductive layer being formed on the substrate and the second photoconductive layer being formed on the first photoconductive layer, the first photoconductive layer being semiconductive, step (b) comprising charging the second photoconductive layer with the second polarity which causes current flow from the substrate through the first photoconductive layer to an interface of the first and second photoconductive layers and then charging the second photoconductive layer with the first polarity for partially neutralizing the charge of the second polarity on the second photoconductive layer.

4,281,052

IMAGE FORMING MEMBER

Hiroshi Ito, Narashino; Ichiro Endo, Yokohama, and Shigeru Ohno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 825,043, Aug. 16, 1977, abandoned. This application Feb. 28, 1980, Ser. No. 125,673

Claims priority, application Japan, Aug. 18, 1976, 51/98437; Aug. 18, 1976, 51/98438

Int. Cl.³ G03G *13/14*

U.S. Cl. 430—48 **11 Claims**

1. In an electrostatic printing process comprising the steps of:

(a) providing an electrostatic printing master from a heat developed photosensitive member having a layer formed by uniformly dispersing a reducible organic silver salt compound in an insulating medium, said layer upon imagewise exposure from an original and heating, providing both a conductive metallic silver grain image corresponding to said image and undesirable by-products tending to prevent conduction through the metallic grain image during electrostatic printing,

(b) forming an electrostatic latent image,

(c) developing said image, and

(d) transferring said developed image to a transfer material, the improvement comprising: employing a capturing means associated with said member capable of capturing said by-products, said capturing means consisting essentially of (i) a capturing layer being overcoated with said organic silver salt layer, or (ii) a capturing substance dispersed in said organic silver salt layer said capturing layer (i) being composed of a capturing substance having a particle size of not more than 10 microns, said capturing substance selected from a particulate inorganic pigment, a porous ion-exchange resin, a cellulosic material, a zeolite or polar adducts thereof, electrically conductive salts, and

mixtures thereof, whereby high quality electrostatic images are formed.

4,281,053

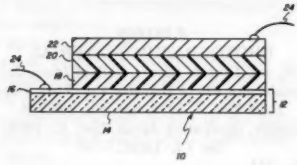
MULTILAYER ORGANIC PHOTOVOLTAIC ELEMENTS

Ching W. Tang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 5,636, Jan. 22, 1979, abandoned, which is a division of Ser. No. 907,361, May 18, 1978, Pat. No. 4,164,431, which is a continuation-in-part of Ser. No. 821,115, Aug. 2, 1977, abandoned. This application Feb. 7, 1980, Ser. No. 119,328

Int. Cl.[3] **B32B** *9/04, 15/04;* **G05D** *11/00;* **H01J** *40/14*

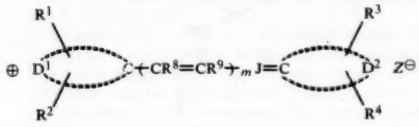
U.S. Cl. 430—58 **7 Claims**



1. A photoconductive laminate comprising

a single-phase layer of an organic electron-donor compound containing a generally planar polycyclic nucleus,

and in contact with said layer, a single-phase layer of a photoconductive organic dye having the structure



wherein:

J is

or N;

D^1 and D^2 are the same or different and are each the non-metallic atoms necessary to complete a heterocyclic 6-membered ring containing O, S, or Se as a ring atom;

R^8, R^9 and R^{10} are the same or different and are each H, alkyl from 1 to about 3 carbon atoms, aryl, cyano or nitro;

R^1, R^2, R^3 and R^4 are the same or different and are each phenyl, or alkyl or alkoxy containing from 1 to about 5 carbon atoms, at least two of R^1, R^2, R^3 and R^4 being phenyl;

m is 1 or 0 and is 0 if J is N;

and $Z^{\ominus}$ is an anion.

4,281,054

OVERCOATED PHOTORECEPTOR CONTAINING INJECTING CONTACT

Anthony M. Horgan, Pittsford, and Richard W. Radler, Marion, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1979, Ser. No. 28,635

Int. Cl.[3] **G03G** *5/04*

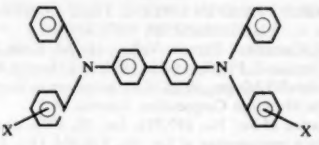
U.S. Cl. 430—59 **11 Claims**

1. A layered photosensitive imaging device which comprises in the order stated:

(a) a supporting substrate,

(b) a hole injecting material capable of injecting holes into a layer on its surface, this material being selected from the group consisting of trigonal selenium, halogen doped trigonal selenium, selenium dioxide, arsenic, tellurium, arsenic selenium alloys, selenium tellurium alloys, and arsenic selenium tellurium alloys,

(c) a hole transport layer in operative contact with the layer of hole injecting material, which transport layer comprises a combination of a highly insulating organic resin having dispersed therein small molecules of an electrically active material, the combination of which is substantially non-absorbing to a visible light but allows injection of photogenerated holes from a charge generator in contact with the hole transport layer and electrically induced holes from the layer of an injecting material, said electrically active material dispersed in said insulating organic resin is a nitrogen containing compound of the formula:



wherein X is selected from the group consisting of (ortho) CH_3, (meta) CH_3, (para) CH_3, (ortho) Cl, (meta) Cl, (para) Cl,

(d) a layer of charge generating material in operative contact with the charge transport layer, said generating material being X-metal free phthalocyanine or vanadyl phthalocyanine, and

(e) a layer of insulating organic resin overlaying the layer of charge generating material.

4,281,055

PHOTOSENSITIVE ELEMENT WITH WATER SOLUBLE INTERLAYER

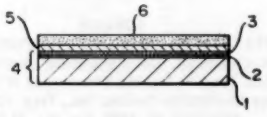
Hiroyuki Moriguchi; Satoshi Haneda; Tadashi Kaneko; Akira Itoh; Takeo Shimura; Masanori Matsumoto, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,196

Claims priority, application Japan, Feb. 24, 1979, 54-20212; Jul. 30, 1979, 54-96051

Int. Cl.[3] **G03G** *5/14, 5/087*

U.S. Cl. 430—60 **6 Claims**



1. A photosensitive element for electrophotography which comprises

(a) a photosensitive layer comprising

(1) a binder resin and (2) photoconductive zinc oxide particles being dispersed in said binder resin, said photoconductive zinc oxide particles having been encapsulated over its surface with an encapsulating resinous layer;

(b) an electroconductive support for said photosensitive layer; and

(c) an intermediate layer consisting essentially of a water-soluble polymer and said intermediate layer being located between said photosensitive layer and said support.

4,281,056

METHOD FOR FORMING NOBLE METAL SILVER PRECIPITATING NUCLEI

Carl M. Berke, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 1, 1979, Ser. No. 80,691
Int. Cl.³ G03C *1/48, 5/54;* F01C *21/16;* F03C *3/00*
U.S. Cl. 430—232 **15 Claims**

1. A method for forming noble metal silver-precipitating nuclei which comprises the steps of

(a) forming an aqueous solution of a stannous salt;

(b) contacting said solution with a ferric oxidizing agent to partially oxidize said stannous ion; and

(c) adding a noble metal salt or complex.

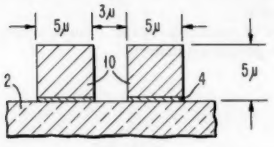
9. The method of claim **1** which includes the step of coating said nuclei on a support.

4,281,057

VARIABLE PRE-SPIN DRYING TIME CONTROL OF PHOTORESISTS THICKNESS

Eugene E. Castellani, Putnam Valley; Ian M. Croll, Pleasantville; Aloysius T. Pfeiffer, Peekskill, and Lubomyr T. Romankiw, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 697,794, Jun. 18, 1976, abandoned, which is a continuation of Ser. No. 510,954, Oct. 2, 1974, abandoned, which is a continuation of Ser. No. 311,006, Nov. 30, 1972, abandoned. This application Feb. 7, 1977, Ser. No. 766,308
Int. Cl.³ G03C *5/00, 1/76, 1/86, 1/94*
U.S. Cl. 430—270 **9 Claims**



1. A process of depositing a uniform layer of photoresist comprising the steps of:

flooding a positive liquid photoresist onto the substrate;

preselecting the desired thickness of the ultimate resist layer by measuring a predetermined interval of time while partially drying the liquid resist for a preliminary stationary drying time following flooding; and

spinning the resist subsequent to the end of said stationary drying time to produce a uniform coating with the thickness increasing with the amount of time allowed for partial drying.

4,281,058

TELLURIUM IMAGING COMPOSITION

Stanford R. Ovshinsky, Bloomfield Hills; Daniel K. Angell, Ann Arbor, and Terry T. Yu, Mt. Clemens, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 10, 1979, Ser. No. 73,700
Int. Cl.³ G03C *1/00, 5/24*
U.S. Cl. 430—296 **35 Claims**

1. In a composition for forming an imaging film, which composition comprises

(a) a tellurium compound reactable with a glyceryl ether to form an image-forming tellurium compound;

(b) a reductant precursor which will abstract labile hydrogen from a hydrogen donor under the influence of activating energy to become a reducing agent with respect to the image-forming tellurium compound;

(c) a source of labile hydrogen for reaction with said reductant precursor; and

(d) a matrix in which said tellurium compound, reductant precursor and source of labile hydrogen are combined in amounts effective to form a composition which may be applied to a substrate,

the improvement wherein said source of labile hydrogen is a compound of the formula

$$R^7—X—CH_2—CHOH—CH_2OH$$

wherein

R^7 is alkyl, alkanoyl, thiazolinyl, alkenyl, benzyl, alkylbenzyl, alkoxybenzyl, hydroxyalkylbenzyl, and halobenzyl; the alkyl radical having from 1 to 7 carbon atoms; and

X is oxygen or sulphur,

there being at least one mole of said diol in said composition for each mole of said image-forming tellurium compound.

4,281,059

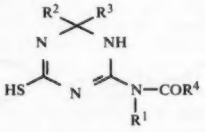
PHOTOGRAPHIC MATERIAL

Kenichi Kishi, and Takashi Sasaki, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

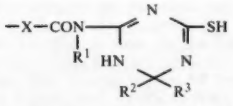
Filed Dec. 4, 1979, Ser. No. 100,234
Claims priority, application Japan, Dec. 12, 1978, 53-154402
Int. Cl.³ G03C *1/34*
U.S. Cl. 430—551 **7 Claims**

1. A photographic material comprising a support and at least one silver halide emulsion layer coated thereon, which material comprises a compound represented by the following general formula [I]:

General formula [I]



wherein R^1 represents a hydrogen atom or a substituted or unsubstituted aryl group, R^2 and R^3 individually represents a hydrogen atom, an alkyl group, alkenyl group, a substituted or unsubstituted aryl group, or R^2 and R^3 represent nonmetal atoms necessary for forming by their mutual linkage a 5- or 6-membered ring, and R^4 represents a hydrogen atom, an alkyl group, alkenyl group, a substituted or unsubstituted aryl group or a group of the general formula



wherein X represents the group $—(CH_2)_n—$ (in which n represents a value of 0, 1, 2, 3, or 4) or an allylene group, and R^1, R^2 and R^3 are individually as defined above.

7. A photographic material according to claim **1**, wherein the material comprises a dye forming coupler.

4,281,060

HEAT-DEVELOPABLE PHOTOSENSITIVE MATERIALS

Toshimasa Usami; Tomoyuki Kobayashi, both of Fujinomiya; Sumitaka Tatsuta, Minami-ashigara, and Shigeo Komine, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 27, 1980, Ser. No. 163,455
Claims priority, application Japan, Jun. 27, 1979, 54-80864
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—618 **15 Claims**

1. In a heat-developable photosensitive material comprising

a support having coated thereon at least one sensitive layer comprising (a) a binder and at least one of (b) an organic silver salt, (c) a photocatalyst, and (d) a reducing agent, the improvement which comprises said heat-developable photosensitive material additionally containing (e) a polyisocyanate.

4,281,061

DOUBLE ANTIBODY FOR ENHANCED SENSITIVITY IN IMMUNOASSAY

Robert F. Zuk, San Francisco; Ian Gibbons, Menlo Park; Gerald L. Rowley, Cupertino, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Jul. 27, 1979, Ser. No. 61,542

Int. Cl.³ C12N *9/96*; G01N *33/54, 33/48, 31/14*

U.S. Cl. 435—7 **17 Claims**

1. An assay method for determining the presence in a sample of an analyte which is a member of a specific binding pair consisting of ligand and its homologous receptor, antiligand; said method employing:

(A) an aqueous medium;

(B) a signal producing system capable of producing a detectible signal and including at least two members, one of which is bonded to ligand and another of which is macromolecular and capable of modulating said signal when in spatial proximity to said member bonded to said ligand;

(C) labeled ligand, wherein ligand is conjugated to a member of said signal producing system and wherein said label is selected from fluorescers or enzymes;

(D) a polyvalent macromolecular member of said signal producing system having a molecular weight of at least about 1×10^4 daltons;

(E) antiligand, when ligand is the analyte;

(F) poly(ligand analog), when ligand has a single binding site to receptor; and

(G) anti(antiligand), which is a polyvalent receptor for antiligand wherein ligand, antiligand, and anti(antiligand) bind to form a matrix which results in said macromolecular member being enclosed in or excluded from said matrix, so as to have enhanced interaction with said labeled ligand or be prevented from interacting with said labeled ligand respectively;

said method comprising:

combining in an aqueous medium at a pH in the range of about 4 to 11 at a temperature in the range of about 10° to 50° C.:

(a) said sample;

(b) said labeled ligand;

(c) said macromolecular member;

(d) any remaining members of said signal producing system;

(e) anti(antiligand)

(f) antiligand, when ligand is the analyte; and

(g) poly(ligand analog), when haptenic ligand is the analyte; and after a sufficient time for antiligand and anti(antiligand) to bind to their homologous ligands

determining the signal level from said signal producing system in said assay medium as compared to an assay medium having a known amount of analyte.

4,281,062

TEST FOR THE IDENTIFICATION OF GLUCOSE AND FOR THE DETERMINATION OF GLUCOSE

Karl-Heinz Kallis, Sebnitz, German Democratic Rep., assignor to Veb Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

Filed Jul. 23, 1979, Ser. No. 60,168

Claims priority, application German Democratic Rep., Jul. 25, 1978, 206900

Int. Cl.³ C12Q *1/54*

U.S. Cl. 435—14 **13 Claims**

1. Test for the identification of glucose and for the determination of glucose, comprising locating, in given instances within a capillary tube marked at both its ends, a test strip which, conjointly with a flow-inducing agent, will allow a reaction not influenced by the time elapsed after sampling, the test strip containing a metering zone, a reaction zone with glucose oxidase applied in an acid solution below the isoelectric point and affixed to it to prevent a substrate inhibition by means of the diffusion of the test fluid taking place within it, and an indicator zone having at least one indicator signal zone of peroxidase and indicator applied in the form of stripes and alternating with untreated intermediate spaces.

4,281,063

PROCESS FOR TREATING CELLULOSIC MATERIALS AND OBTAINING GLUCOSE THEREFROM

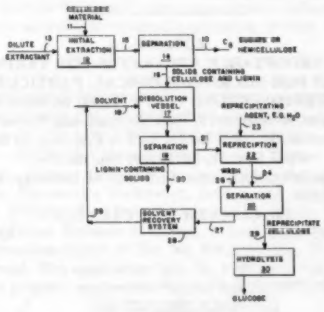
George T. Tsao; Michael R. Ladisch; Christine M. Ladisch, all of West Lafayette, Ind., and Teh-An Hsu, Honolulu, Hi., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 884,479, Mar. 8, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,537

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.³ C13K *1/02*; C12P *19/14*

U.S. Cl. 435—99 **17 Claims**



1. A process for providing a yield of glucose from a cellulosic material, said process comprising:

fractionating the cellulosic material into a solid cellulose-and lignin-containing fraction and a liquid fraction containing hemicellulose or C_5 sugars derived therefrom;

treating said solid cellulose- and lignin-containing fraction with a solvent for cellulose to dissolve the cellulose in said fraction and to form a lignin-containing residue;

reprecipitating the dissolved cellulose; and

hydrolyzing the reprecipitated cellulose to yield glucose.

4,281,064

PROCESS FOR PRODUCING LIPIDS HAVING A HIGH LINOLEIC ACID CONTENT

Osamu Suzuki; Yoshifumi Jigami; Satoshi Nakasato, and Tetsutaro Hashimoto, all of Yatabe, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,869
Claims priority, application Japan, Feb. 19, 1979, 54-18228
Int. Cl.[3] C12P 7/64
U.S. Cl. 435—134 2 Claims

1. A process for producing lipids comprising the steps of:
(a) cultivating a fungus of the Pellicularia genus aerobically in a liquid containing 20–80 g/l of a carbon source selected from the group consisting of glucose, sucrose, starch, molasses, and cellulose, a nitrogen source in the range of 1/5 to 1/100 of the amount of carbon sources, and an inorganic salt; and
(b) separating lipids having a high linoleic acid content from the resulting culture.

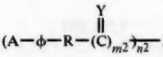
4,281,065

PHENCYCLIDINE CONJUGATES TO ANTIGENIC PROTEINS AND ENZYMES

Cheng-I Lin, San Jose, and Prithipal Singh, Santa Clara, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Jan. 25, 1979, Ser. No. 6,935
Int. Cl.[3] C12N 9/96; G01N 33/54; C07G 7/00
U.S. Cl. 435—188 10 Claims

1. Compound of the formula:



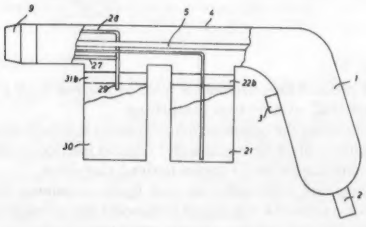
wherein:
A is 1-(N piperidyl)cyclohexyl-1;
ϕ is p-phenylene;
R is a divalent aliphatic group of from 2 to 6 carbon atoms and 0 to 1 oxygen atom bonded solely to aliphatically saturated carbon atoms;
Y is oxygen;
m^2 is one;
Z^2 is a poly(amino acid);
n^2 is at least one and not greater than the molecular weight of Z^2 divided by 500.

4,281,066

TRANSPORTABLE APPARATUS FOR TAKING SAMPLES FOR MICROBIOLOGICAL, PARTICULARLY BACTERIOLOGICAL TESTS FROM SURFACES

Volker Thran, Allmandstr. 9, 7000 Stuttgart, and Werner Treige, Waldenserstr. 14, 1000 Berlin, both of Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,474
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853956
Int. Cl.[3] C12M 1/26; C12Q 1/24
U.S. Cl. 435—292 43 Claims



1. A transportable apparatus for taking microbiological and bacteriological test samples from surfaces by use of a rinsing liquid atomized by a compressed gas, comprising:
a compressed gas supply connection;
a rinsing liquid supply connection;
a nozzle, having a free end which can be placed on and pressably engage the surface;
an atomizer disposed in the nozzle, through which the compressed gas flows from the compressed gas supply connection, drawing the rinsing liquid through the rinsing liquid supply connection, the atomized rinsing liquid being sprayed onto the surface;
a discharge line immediately adjacent the free end of the nozzle and arranged around the periphery thereof, for removing a mixture of compressed gas, rinsing liquid and rinsed-off particles formed under the nozzle; and,
a collecting tank connection in fluid communication with the discharge line through which the mixture is urged only by pressure from after flowing compressed gas in the nozzle, thereby obviating the need for a vacuum source downstream from the nozzle.

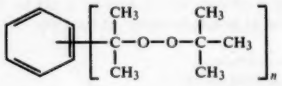
4,281,067

METHOD OF POLYMERIZING STYRENE

Charles Kienzle, East Brunswick; Stanley E. Gebura, Mountain Lakes, and John W. Boghosian, Plainsboro, all of N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 849,904, Nov. 9, 1977. This application Aug. 8, 1980, Ser. No. 176,315
Int. Cl.[3] C08J 9/20
U.S. Cl. 521—56 14 Claims

1. A method for manufacturing a flame-retardant expandable polystyrene bead product, comprising polymerizing a polymerizable composition containing a major portion of styrene in the presence of a blowing agent, the polymerizable composition containing from about 0.4 part to about 2.0 parts by weight per 100 parts by weight of styrene, of an organic bromide selected from the group consisting of hexabromocyclododecane, tetrabromocyclooctane, tetrabromovinylcyclohexane, and mixtures thereof and from about 0.01 part to about 0.15 part by weight per 100 parts by weight of styrene, of an organic peroxide synergist corresponding to the formula:



wherein n equals 2 or 3, and wherein the composition is polymerized to a K value of 55 to 59, the bead product having a moisture content of from about one-half to one percent by weight based on the weight of the product.

4,281,068

AQUEOUS POLYESTER EMULSIONS FOR THE PRODUCTION OF OPEN-PORE COATINGS

Walter Frank; Otto Bendszus; Hans J Freier, and Hans-Joachim Traenckner, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 7,141, Jan. 29, 1979. This application Sep. 15, 1980, Ser. No. 187,460
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804216
Int. Cl.[3] C08J 9/02
U.S. Cl. 521—62 6 Claims

1. A monomer-free aqueous emulsion comprising
A. 10 to 90% by weight of a mixture of α,β-ethylenically unsaturated polyesters,
B. 9.95 to 83% by weight of water,
C. 0.05 to 2% by weight of a paraffin wax sealing agent having a melting point of 35° to 100° C. and,
D. 0 to 5% by weight of a thickener,

the percentages by weight, being based on the sum of components A, B, C and D and the polyester mixture A containing

(a) 50 to 95% by weight, based on the sum of (a) and (b), of at least one α,β-ethylenically unsaturated polyester which contains per 100 g of polyester (a) from 0.2 to 0.8 moles of β,γ-ethylenically unsaturated ether groups, but which is free of co-condensed polyalkylene glycol residues having molecular weights of 250–2,000, and

(b) 5 to 50% by weight, based on the sum of (a) and (b), of at least one α,β-ethylenically unsaturated polyester of which from 25 to 90% by weight, based on (b), consists of co-condensed polyalkylene glycol residues having a molecular weight of from 250 to 2,000 and which contains per 100 g of polyester (b) from 0.4 to 0.5 mole of β,γ-ethylenically unsaturated ether groups.

4,281,069

PHENOLIC FOAM

Thomas G. Harris, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 14, 1980, Ser. No. 149,766
Int. Cl.³ C08J 9/02
U.S. Cl. 521—123 **4 Claims**

1. A phenolic foam produced, without the use of a chlorofluorocarbon or hydrocarbon blowing agent, as the reaction product of a mixture comprising a phenolic resole, a surfactant and stannous chloride.

4,281,070

MELT PROCESSABLE UHMWPE

Howard A. Scheetz, Lancaster, and Richard C. Gilles, Sinking Spring, both of Pa., assignors to The Polymer Corporation, Reading, Pa.

Filed Jan. 7, 1980, Ser. No. 110,205
Int. Cl.³ C08K 3/36
U.S. Cl. 525—1 **1 Claim**

1. An ultrahigh molecular weight polyethylene molding composition comprised of 70 to 95 percent by weight ultrahigh molecular weight polyethylene, from 5 to 30 percent by weight of an intermediate molecular weight polyethylene having a molecular weight in a range from about 400,000 to 600,000 and from 0.1 to 10 percent by weight of a pyrogenic silica nucleating agent.

4,281,071

FILLED UNSATURATED POLYESTER RESIN COMPOSITIONS HAVING LOWERED VISCOSITIES

Ralph B. Fearing, Bardonia; Jeffrey E. Telschow, Tarrytown, and Edward D. Weil, Hastings-on-Hudson, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 26, 1980, Ser. No. 124,877
Int. Cl.³ C08K 5/51
U.S. Cl. 525—2 **8 Claims**

1. A filled unsaturated polyester resin composition which comprises an unsaturated polyester resin, a filler, and an effective amount of an organic phosphite ester having the formula

$$(RO)_2\overset{\overset{O}{\|}}{P}H$$

where R is independently selected from the group consisting of hydrogen, alkyl, and aryl, with the proviso that at least one R is either alkyl or aryl for reduction of the viscosity of the composition.

4,281,072

AMORPHOUS COMPLEXES OF POLYTHIOETHERS WITH SALTS

Raymond E. Wetton, Woodhouse Eaves, and David B. James, Norwich, both of England, assignors to National Research Dev'p Corp., London, England

Continuation of Ser. No. 828,607, Aug. 29, 1977, Pat. No. 4,200,701. This application Oct. 12, 1979, Ser. No. 84,376
Claims priority, application United Kingdom, Aug. 31, 1976, 35990/76
The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.
Int. Cl.³ C08L 81/00, 81/02
U.S. Cl. 525—4 **22 Claims**

1. A polymeric material which comprises an amorphous solid solution formed between a metallic salt and a polymer by virtue of a multiplicity of thioether linkages present in the backbone of said polymer or in pendant groups of said polymer or both, the metal of the metallic salt being selected from the group consisting of Be, Mg, Sr, Ba, Sc, Y, Ti, V, Cr, Mn, Fe, Co, Ni, Zn, Ga, Ge, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Al, La and other lanthanides.

4,281,073

METHOD OF PRODUCING CROSS-LINKED, UNSATURATED POLYESTERS

Joseph P. Michel, Anglet, France, assignor to Martine Anciaux widow Vastesaeger, Anglet, France, a part interest

Filed Sep. 18, 1978, Ser. No. 943,332
Claims priority, application France, Sep. 28, 1977, 77 29123
Int. Cl.³ C08G 63/76
U.S. Cl. 525—11 **9 Claims**

1. A method of producing cured unsaturated polyesters from a solution of linear unsaturated polyester in a cross-linking agent, comprising the step of contacting, at room temperature and under atmospheric pressure, a reaction medium comprising said solution and a free radical initiator and containing free hydroxyl radicals with at least one totally hydrolyzable chlorine-containing derivative in an amount from 1 to 10% by weight, based on said solution, said chlorine-containing derivative being selected from the group comprising phosphorous chloride, phosphorous oxychloride, and silicon chloride and an acid chloride selected from acetyl chloride and benzoyl chloride, to thereby form said cured unsaturated polyesters in a single step without the external application of heat.

4,281,074

PROCESS OF MANUFACTURING CURED UNSATURATED POLYESTER RESINS WITH A REGULAR NETWORK STRUCTURE

Zbigniew Jedlinski, Gliwice; Antoni Kotas, Zabrze; Boleslaw Ryndak, Debica; Stanislaw Mazur, Debica; Jan Czarnecki, Debica; Mieczyslaw Walkowicz, Debica, and Stanislaw Jedlinski, Debica, all of Poland, assignors to Polska Akademia Nauk, Zaklad Polimerow, Zabrze, Poland

Continuation-in-part of Ser. No. 936,938, Aug. 25, 1978, abandoned. This application Feb. 26, 1980, Ser. No. 124,933
Claims priority, application Poland, Sep. 2, 1977, 200683
Int. Cl.³ C08L 67/00
U.S. Cl. 525—40 **4 Claims**

1. A process for producing cured unsaturated polyester resins having a regular network structure which comprises the consecutive steps of (1) polycondensing a mixture of a crude diene adduct of 2-naphthol and maleic anhydride at a temperature within the range from 180° to 200° C. with an alcohol selected from the group consisting of aliphatic glycols and dihydric aromatic alcohols and mixtures thereof, in the ratio of from 0.1 to 3.0 moles of the alcohol per 1 mole of the adduct (2); condensing the resultant product at a temperature within the range from 160° to 210° C. with an unsaturated acid or the anhydride thereof and an alcohol selected from the group

consisting of glycols and dihydric aromatic alcohols in a quantity equimolar to the unsaturated acids or anhydride; and (3) subsequently dissolving the product of step (2) in styrene and copolymerizing to obtain a cured polyester resin.

4,281,075

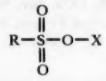
SULFONATE ESTER CATALYSTS IN THERMOSETTING COMPOSITIONS

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1980, Ser. No. 109,591
Int. Cl.[3] C08L *63/00, 29/02, 61/20*
U.S. Cl. 525—110 **30 Claims**

1. In a thermosetting composition comprising a film-forming component and an amine-aldehyde compound, which composition cures by reaction between said amine-aldehyde compound and hydroxyl functionality present on said film-forming material, said hydroxyl functionality being selected from (i) hydroxyl groups present on said film-forming material prior to reaction during cure of said composition, (ii) hydroxyl groups generated in situ on said film-forming material during cure of said coating composition, and (iii) a combination of (i) and (ii),

wherein the improvement comprises including in said composition a latent reactive catalyst in an amount of between about 0.05 and about 7 weight percent based on the total weight of reactive components, including said latent reactive catalyst, in said coating composition, said latent reactive catalyst having the formula:



wherein R is selected from alkyl and aryl groups and X is selected from 2-hydroxycycloalkyl and aryl substituted 2-hydroxycycloalkyl groups.

4,281,076

THERMOSETTING ACRYLIC RESIN POWDER COATING COMPOSITIONS

Masaaki Kamimura, Hiratsuka, Japan, assignor to Kansai Paint Company, Limited, Japan

Filed Apr. 3, 1979, Ser. No. 26,802
Claims priority, application Japan, Aug. 18, 1978, 53-101346; Sep. 27, 1978, 53-119783
Int. Cl.[3] C08L *37/00, 75/04*
U.S. Cl. 525—124 **15 Claims**

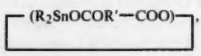
1. A thermosetting acrylic resin powder coating composition comprising:

(A) a mixture of 10 to 90% by weight of a glycidyl-containing acrylic resin comprising (i) 15 to 40% by weight of a glycidyl-containing vinyl monomer and/or methylglycidyl-containing vinyl monomer, (ii) 10 to 85% by weight of an acrylate and/or methacrylate and (iii) 0 to 50% by weight of other vinyl monomer, and 90 to 10% by weight of a hydroxyl-containing acrylic resin comprising (i) ' 5 to 40% by weight of a hydroxly-containing vinyl monomer, (ii) 10 to 95% by weight of an acrylate and/or methacrylate and (iii) 0 to 50% by weight of other vinyl monomer, or a glycidyl- and hydroxyl-containing acrylic resin comprising (i) 15 to 30% by weight of a glycidyl-containing vinyl monomer and/or methylclycidyl-containing vinyl monomer, (ii) 5 to 20% by weight of a hydroxyl-containing vinyl monomer, (iii) 10 to 80% by weight of an acrylate and/or methacrylate and (iv) 0 to 40% by weight of other vinyl monomer,

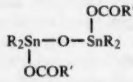
(B) a blocked isocyanate compound having a melting point of 60° to 140° C. and solid at room temperature,

(C) an aliphatic dibasic acid or anhydride thereof, and

(D) at least one tin compound represented by the formula SnO_2, R_2SnO, R_2SnX_2, $R_2Sn(OCOR')_2$,



R_3SnX, $R_3Sn\text{-}O\text{-}SnR_3$



or R_4Sn wherein R is phenyl or alkyl having 1 to 18 carbon atoms, X is halogen, alkoxyl having 1 to 18 carbon atoms or hydroxyl, R' is alkyl or alkenyl having 1 to 18 carbon atoms and n is an integer of 1 to 5,

each of the acrylic resins having a glass transition temperature of 50° to 90° C. and a weight average molecular weight of 5000 to 20000, wherein when said mixture is used as the component (A), the coating composition comprises 45 to 80% by weight of the mixture, 20 to 40% by weight of the blocked isocyanate compound (B), 3 to 20% by weight of the aliphatic dibasic acid or anhydride thereof (C) and 0.1 to 5% by weight of the tin compound (D), or when said glycidyl- and hydroxyl-containing acrylic resin is used as the component (A), the coating composition comprises 45 to 75% by weight of the acrylic resin, 22 to 40% by weight of the blocked isocyanate compound (B), 3 to 12% by weight of the aliphatic dibasic acid or anhydride thereof (C), and 0.4 to 4.0% by weight of the tin compound (D).

4,281,077

PLASTIFIERS, METHOD OF PREPARATION AND PVC COMPOSITIONS CONTAINING SAME

J. William Hirzy, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 864,889, Dec. 27, 1977, Pat. No. 4,210,730. This application Mar. 24, 1980, Ser. No. 133,187
Int. Cl.[3] C08G *63/76;* **C08L** *27/06, 75/06*
U.S. Cl. 525—129 **8 Claims**

1. An ordered, solid, block copolyester having from about 15 to about 50 percent by weight amorphous end blocks and from about 85 to about 50 percent by weight ordered polymeric center block having from 20 to about 100 percent crystallinity based on heat of fusion, said copolyester having from about 20 to about 95 percent crystallinity based on heat of fusion, said ordered polymeric center block consisting essentially of crystalline or semi-crystalline prepolymer blocks coupled via ester or urethane linkages, said crystalline prepolymer prepared by reacting equivalent amounts of dicarboxylic acid and crystallizing dihydroxy compound, said semi-crystalline prepolymer being prepared by reacting dicarboxylic acid with a mixture of non-crystallizing dihydroxy compound and and crystallizing dihydroxy compound in a ratio of non-crystalizing dihydroxy compound to crystalizing dihydroxy compound from about 0.1 to about 0.5. and said end blocks and center block being acid halide-coupled.

6. Composition comprising a halogen-containing polymer and a copolyester of claim **1**.

4,281,078

HIGH-SOLIDS POLYURETHANE ENAMEL COATING COMPOSITION

Clifford H. Strolle, Springfield, Pa., and Glenn D. Thornley, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 26, 1979, Ser. No. 97,582
Int. Cl.[3] C08L *75/06*
U.S. Cl. 525—131 **14 Claims**

1. A coating composition, capable of curing at ambient temperatures, of a mixture of a polymer blend and a solvent for

the polymer blend wherein the blend is 65–90% by weight of the mixture and consists essentially of

(a) 25–45% by weight, based on the weight of the blend, of an organic polyisocyanate;

(b) 5–25% by weight, based on the weight of the blend, of a copolymer of

(1) a hydroxyalkyl ester of acrylic or methacrylic acid wherein the alkyl group has 2–10 carbon atoms and wherein the hydroxyalkyl ester is 25–35% by weight of the copolymer, and

(2) at least one other ethylenically unsaturated monomer that is copolymerizable with the hydroxyalkyl ester but that is free of functional groups reactive with the polyisocyanate at ambient temperatures, wherein this monomer is selected from the group consisting of vinyl chloride, vinylidene chloride, ethylene, propylene, vinyl acetate, butadiene, styrene, α-methyl styrene, dibutyl maleate, C_1–C_{12} alkyl esters of acrylic acid, C_1–C_{12} alkyl esters of methacrylic acid, and mixtures of these

wherein the copolymer has a hydroxyl content of 2–6% by weight; and

(c) 40–60% by weight, based on the weight of the blend, of a saturated polyester polyol that is the reaction product of

(1) pentaerythritol and at least one branched-chain glycol wherein the molar ratio of glycol to pentaerythritol is from 2:1 to 6:1,

(2) an aromatic or aliphatic monocarboxylic acid selected from the group consisting of benzoic acid, paratertiary butyl-benzoic acid, triethyl benzoic acid, toluic acid, phenylacetic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, pelargonic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, and mixtures of these, and

(3) a mixture of an aromatic and a aliphatic dicarboxylic acid wherein the molar ratio of aromatic acid to aliphatic acid is from 2:1 to 6:1,

wherein the polyol has a hydroxyl content of 5–9% by weight.

4,281,079

POLYARYLENE ESTER COMPOSITIONS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 11, 1978, Ser. No. 968,524

Int. Cl.³ B28B *3/20*; C08L *23/00*

U.S. Cl. 525—152 **18 Claims**

1. A composition having improved impact strength comprising in intimate admixture a polyarylene ester and up to about 10% by weight of an elastomer consisting essentially of ethylene 1-alkene copolymer present in an amount sufficient to provide improved impact strength in comparison with the polyarylene ester composition without the elastomeric copolymer, wherein the polyarylene ester forms a melt at a temperature below about 350° C. and is the condensation product of a C_8 to C_{25} aromatic dicarboxylic acid and a C_6 to C_{25} diphenol and wherein the 1-alkene is selected from the group consisting of propylene and 1-butene.

4,281,080

AGE RESISTANT RESIN COMPOSITIONS CONTAINING ANILINO ARYL ACRYLAMIDE POLYMER

Herbert L. Bullard, Norton Village, and Robert A. Osborn, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 511,412, Oct. 2, 1974, Pat. No. 4,010,140. This application Feb. 17, 1977, Ser. No. 769,604

Int. Cl.³ C08L *33/24, 7/00, 9/00*

U.S. Cl. 525—205 **6 Claims**

1. A rubber composition having enhanced resistance to oxidation aging which comprises 100 parts by weight of a rubber selected from natural rubber and synthetic rubber in admixture with

(A) 1 to about 10 parts by weight or

(B) for pressure sensitive adhesive, about 40 to about 250 parts by weight

of an age resistant resin composition where said resin composition has a softening point

(a) in the range of about 80° to about 110° C. when its monomers are polymerized in the presence of aluminum chloride or ethylaluminum dichloride, or

(b) about 0° C. to about 30° C. when the monomers are polymerized in the presence of boron trifluoride or boron trifluoride etherate,

where said resin is prepared by polymerizing (1) about 40 to about 80 weight percent units derived from at least one diolefin selected from piperylene, 1,3-butadiene and 2,3-dimethyl-1,3-butadiene, (2) about 60 to about 20 weight percent units derived from at least one aliphatic monoolefin selected from at least one of isobutylene, 2-methyl-1-butene, 2-methyl-2-butene, 2,3-dimethyl-1-butene, 2,3-dimethyl-2-butene, 2-methyl-1-pentene and 2-methyl-2-pentene, where the mole ratio of diolefin to monoolefin is about 0.7/1 to about 2/1, (3) about 0 to about 40 weight percent units derived from at least one of dicyclopentadiene, styrene and α-methylstyrene and (4) about 0.2 to about 2 weight percent units derived from at least one compound selected from N-(4-anilinophenyl)-methacrylamide and N-(1,3-dimethyl-butyl)-N-(p-anilinophenyl)acrylamide.

4,281,081

PROCESS FOR GRAFT COPOLYMERIZATION

Heinz Jost, Messel; Hellmuth Knoell, Reichenbach; Gerhard Markert, Ober-Ramstadt-Eiche, and Horst Pennewiss, Neu-Kranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,395

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805826

Int. Cl.³ C08F *255/02*

U.S. Cl. 525—281 **6 Claims**

1. The method of making a lubricating-oil additive which improves the viscosity index and has a dispersing and detergent action, which method comprises graft copolymerizing 0.5 to 10 percent of N-vinyl pyrrolidone together with 0.1 to 3 percent of N-vinyl imidazole onto an oil-soluble base polymer selected from the group consisting of polyalkyl methacrylic acid esters of alcohols having at least 8 carbon atoms and mixtures of said polyalkyl methacrylic acid esters with a polyolefin, said percentages being by weight of said base polymer.

4,281,082

ORGANIC PIGMENTS

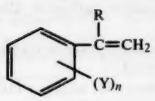
William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 106,607

Int. Cl.³ C08L *33/02*

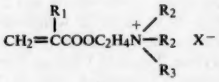
U.S. Cl. 525—296 **12 Claims**

1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles, said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alphachloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula

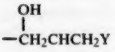


wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

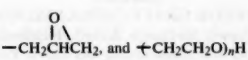
(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula



wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a C_1–C_4 alkyl, R_3 is selected from the group consisting of hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,



where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed.

4,281,083

BLENDS OF POLY(P-METHYLSTYRENE) WITH POLYFUNCTIONAL MONOMER

Harold A. Arbit, Highland Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 971,179, Dec. 20, 1978, abandoned. This application Aug. 1, 1980, Ser. No. 174,402

Int. Cl.³ C08F *257/02*

U.S. Cl. 525—305 **5 Claims**

1. A blend consisting essentially of poly(methylstyrene) containing at least 90 weight percent poly(p-methylstyrene) with between about 0.1 weight percent and about 10 weight percent of a polyfunctional monomer.

4,281,084

COCONTINUOUS INTERPENETRATING MORPHOLOGICAL NETWORK COMPOSITION OF POLYMER OF METHYL METHACRYLATE AND POLYMER OF ETHYLENE-VINYL ACETATE

Robert P. Fellmann, Wrightstown; Daniel R. Kory, Levittown, and William H. Staas, Churchville, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 1, 1976, Ser. No. 737,628

Int. Cl.³ C08L *23/26, 31/04*

U.S. Cl. 525—309 **7 Claims**

1. A composition comprising a cocontinuous interpenetrating mor phological network of (A) a polymer of at least 50 weight percent methyl methacrylate units and (B) a polymer of ethylene and vinyl acetate, wherein the ratio of (A) to (B) is about 1:0.01 to about 1:1.

4,281,085

RUBBER COMPOUND CAPABLE OF GIVING A VULCANIZED RUBBER HAVING A HIGH MODULUS OF ELASTICITY

Hiroharu Ikeda, Machida, and Yasuyuki Shimozato, Yokohama, both of Japan, assignors to Japan Synthetic Rubber Company, Ltd., Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,778

Claims priority, application Japan, May 12, 1978, 53/55526; Feb. 14, 1979, 54/14958

Int. Cl.³ C08F *126/00, 126/06*

U.S. Cl. 525—326 **15 Claims**

1. A rubber compound, which comprises:

(1) 100 parts by weight of a rubber component,

(2) 0.1–15 parts by weight of an amine salt of a carboxylic acid, and

(3) 0–7 parts by weight of sulfur, said rubber component (1) comprising an elastomeric copolymer being composed of a C_4 or C_5 conjugated diene, styrene and a glycidyl group-containing monomer; the content of said conjugated diene, the total amount of said conjugated diene and said styrene and the content of said glycidyl group-containing monomer in said elastomeric copolymer being 50% by weight or more, 80–99.5% by weight and 0.5–20% by weight, respectively.

4,281,086

POLYMER BOUND MULTIDENTATE COMPLEXES

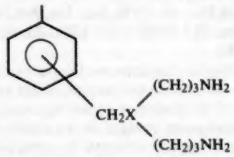
John H. Gaul, Jr., Midland, Mich., and Russell S. Drago, Champaign, Ill., assignors to The University of Illinois Foundation, Urbana, Ill.

Division of Ser. No. 968,123, Dec. 11, 1978, Pat. No. 4,230,828. This application May 12, 1980, Ser. No. 148,065

Int. Cl.³ C08F *8/18, 8/26, 8/30, 8/32*

U.S. Cl. 525—330 **2 Claims**

1. A polymer bound multidentate ligand system comprising an insoluble crosslinked polymer support and at least one pendant polyamine ligand attached thereto, the ligand being represented by the formula



where X is nitrogen or phosphorus.

4,281,087

LACTONE COPOLYMERS, PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Jean Heuschen, Malmedy; Robert Jerome, Tilff, both of Belgium, and Philippe Teyssie, Avenue de Bois de Rognac, 85, B. 4121 Neuville-en-Condroz, Belgium, assignors to Philippe Teyssie, Neuville-en-Condroz, Belgium

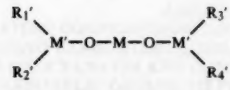
Continuation-in-part of Ser. No. 911,025, May 31, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,354

Int. Cl.³ C08L *67/04;* **C08G** *63/10*

U.S. Cl. 525—361 **9 Claims**

1. A process for the preparation of lactone block and graft copolymers which comprises

(a) contacting a base polymer containing one or more hydroxyl groups with a catalyst of the formula



wherein R_1', R_2', R_3' and R_4' are alkoxy groups having 1 to 20 carbon atoms, M' is a trivalent metal and M is a divalent metal, whereby the organometallic group becomes bonded to the base polymer by way of the hydroxyl groups;

(b) replacing the remaining alkoxy group having 1 to 20 carbon atoms with a group having no catalytic effect on lactone polymerization;

(c) reacting the resulting intermediate containing organometallic groups with a lactone.

4,281,088

NOVEL HALOBISPHENOLETHYLENE POLYCARBONATE-POLYESTER BLENDS

Philip L. Kinson, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

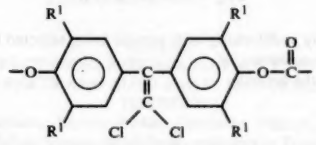
Continuation of Ser. No. 52,279, Jun. 26, 1979, abandoned. This application Aug. 22, 1980, Ser. No. 180,351

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—439 **5 Claims**

1. A polymer blend comprising:

(I) about 1–99 parts by weight of a polycarbonate containing halobis(phenyl)ethylene carbonate units of the formula:



where independently each R^1 is hydrogen, C_{1-4} alkyl or phenyl, and having an intrinsic viscosity of 0.38 to 0.7 deciliters per gram, and

(II) about 99–1 parts by weight of a poly(1,4-alkylene terephthalate) having an intrinsic viscosity of 0.5 to 1.3 deciliters per gram.

4,281,089

POLYURETHANE COMPOSITIONS AND PROCESS

Jose F. Pazos, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 8, 1980, Ser. No. 184,950

Int. Cl.³ C08G *18/80, 18/50, 18/54*

U.S. Cl. 525—456 **21 Claims**

1. A curable polyurethane prepolymer composition consisting essentially of a reaction product of the following components (A) and (C) with (B):

(A) 1 mole of a polymeric glycol having a number average molecular weight of about 400–3000;

(B) at least 1.3 moles of an organic diisocyanate; and

(C) a blocking agent having at least three active hydrogen groups per molecule capable of reacting with isocyanate groups, the proportion of the blocking agent being about 0.01 to 0.15 active hydrogen equivalent per equivalent of isocyanate groups in excess of hydroxyl groups.

with the proviso that when the blocking agent is a phenol-/aldehyde resin, its proportion is at most 5% by weight of component (A).

11. A process for making cured polyurethane elastomer articles, said process comprising the following two steps:

(1) the following composition is blended together and molded at a sufficiently high temperature to crosslink the prepolymer, thereby to impart to the shaped article adequate mechanical integrity to permit the article to be demolded prior to complete cure:

(A) 1 mole of a polymeric glycol having a number average molecular weight of about 400–3000;

(B) at least 1.3 moles of an organic diisocyanate;

(C) about 0.01 to 0.15 equivalent of an isocyanate-blocking agent having at least three active hydrogen groups per equivalent of isocyanate groups in excess of hydroxyl groups;

with the proviso that when the blocking agent is a phenol-/aldehyde resin, its proportion is at most 5% by weight of component (A); and

(D) a diol having aliphatic hydroxyl groups and a molecular weight of less than about 250,

the amount of the diol being equivalent to at least 75%, but no more than about 120%, of the diisocyanate (B) in excess of the polymeric glycol (A); and

(2) the crosslinked molded article is demolded and maintained at a temperature of about 25°–150° C. until cure is completed;

with the proviso that, instead of a mixture of components (A), (B), (C), and (D), one can use a mixture of (D) or of (D) and one of (A) and (C) with the product of a one-step or a two-step reaction of the remaining components with one another.

4,281,090

CATECHOL RESINS FOR THE SHELL PROCESS

Robert S. Craig, Hoffman Estates, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Division of Ser. No. 869,407, Jan. 16, 1978, Pat. No. 4,206,262. This application Nov. 1, 1979, Ser. No. 90,388

Int. Cl.³ C08L *61/12*

U.S. Cl. 525—501 **3 Claims**

1. A thermosetting molding composition consisting essentially of from about 50% to about 98% of a phenol-formaldehyde novolak resin; from about 2% to about 50% of a catechol-formaldehyde novolak resin; and an amount of a curing agent to render the novolak resin potentially thermosetting.

4,281,091

UNSATURATED MELAMINE CONDENSATES

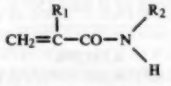
William F. Strazik; John R. LeBlanc, both of Wilbraham, and J. Owen Santer, East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1979, Ser. No. 105,060

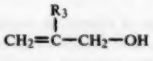
Int. Cl.³ C08F *283/00;* **C08G** *8/30*

U.S. Cl. 525—518 **12 Claims**

1. An unsaturated condensate of an alkoxymethylmelamine, an allylic alcohol, and an acrylamide, wherein the alkoxymethylmelamine has a combined ratio of formaldehyde to melamine in the range of about 5:1 to about 6:1 and a combined ratio of etherifying alcohol to melamine in the range of about 4.7:1 to about 6:1, wherein the alkoxymethyl groups of the unsaturated condensate contain C_1 to C_{10} alkoxy groups, wherein the acrylamide is represented by the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen and methyl, wherein the allyl alcohol is represented by the formula:



wherein R_3 is hydrogen or a C_1 to C_4 alkyl group, wherein the

ratio of allylic alcohol moieties to acrylamide moieties in the condensate is in the range of about 3:1 to about 1:3, wherein the condensate contains at least about 0.75 allylic moieties and no more than about 3 acrylamide moieties per melamine ring and wherein the total of allylic moieties and acrylamide moieties of the condensate is in the range of about 2 to about 4 per melamine ring.

4,281,092

VULCANIZABLE FLUORINATED COPOLYMERS

Almut F. Breazeale, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 965,071, Nov. 30, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 83,751

Int. Cl.[3] **C08F** *8/00, 214/26*

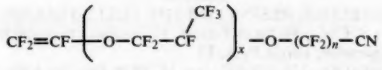
U.S. Cl. 526—247 **10 Claims**

1. A copolymer, the elastomeric vulcanizate of which is suitable for use where extraordinary resistance to environmental attack by a temperature of 700° F. and corrosive fluids is required, comprising copolymerized units of:

(a) 53–79.8 mole percent tetrafluoroethylene,

(b) 20–45 mole percent perfluoromethyl perfluorovinyl ether, and

(c) 0.2–2 mole percent of a cure site monomer of the formula:



where n = 1–4 and x = 1–2.

4,281,093

CATALYST COMPOSITIONS AND THEIR USE IN THE PREPARATION OF RELEASE COATINGS

William D. Garden, Largs, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 28, 1979, Ser. No. 107,853

Claims priority, application United Kingdom, Jan. 31, 1979, 03438/79

Int. Cl.[3] **C08G** *77/06*

U.S. Cl. 528—15 **5 Claims**

4. A heat-curable catalyzed polysiloxane coating composition containing at least two liquid organo polysiloxanes, at least one of which contains silicon-bonded hydrogen, and at least one of which contains silicon-bonded hydroxyl, allyl or vinyl groups, together with an organo-metallic complex of platinum or rhodium wherein the improvement comprises having present sufficient of a liquid allyl ether compound to dissolve said organo-metallic complex in the composition, said liquid allyl ether compound being

(a) free from groups having a deleterious effect on the catalytic activity of the organo-metallic complex as a catalyst for the condensation of polysiloxanes containing silicon bonded hydrogen with diorganopolysiloxanes containing silicon-bonded hydroxy or allyl or vinyl groups, and

(b) has a boiling point of at least 150° C. at 1 bar pressure.

4,281,094

NOVEL MERCAPTOORGANOPOLYSILOXANES

Gary R. Homan, and Jan M. Blevins, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 99,303, Dec. 3, 1979, abandoned. This application Jul. 23, 1980, Ser. No. 171,622

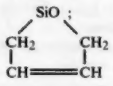
Int. Cl.[3] **C08G** *77/22*

U.S. Cl. 528—30 **5 Claims**

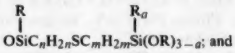
1. As a composition of matter, an organopolysiloxane consisting essentially of a combination of units having at last three and no more than one hundred diorganosiloxane units per molecule wherein the units of the combination of siloxane units forming the molecule are selected from the group consisting of:

units of the formula,

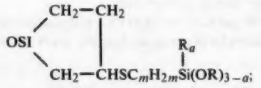
units of the formula,



alkoxy containing units of the formula,



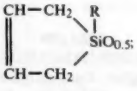
alkoxy containing units of the formula



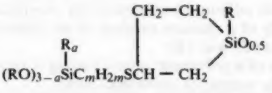
and any endblocking units present being selected from the group consisting of

units of the formula,

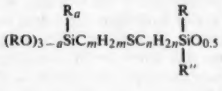
units of the formula,



alkoxy containing units of the formula,



and alkoxy containing units of the formula



wherein R is a lower alkyl radical; R′ is a lower alkyl, aryl or lower alkenyl radical; R″ is a lower alkyl or aryl radical; a is either 0 or 1; n is from 2 to 4 inclusive; m is from 1 to 6 inclusive; and wherein said compound includes at least one alkoxy containing unit and at least one aliphatically unsaturated unit.

4,281,095

COATING COMPOSITIONS OBTAINED BY REACTING AMINO CARBOXYLIC ACIDS DERIVATIVES WITH POLYISOCYANATES AND COMPOUNDS CONTAINING CARBOXYLIC GROUPS TO PRODUCE POLYMERS CONTAINING HYDANTOIN RINGS AND AMIDE GROUPS

Willi Dünwald, Leverkusen; Jürgen Lewalter, Odenthal; Rudolf Merten, Leverkusen; Ludwig Rottmaier, Odenthal; Bernhard Schulte, and Karl-Heinrich Meyer, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,633

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854412

Int. Cl.[3] **C08G** *18/06*

U.S. Cl. 528—49 **9 Claims**

1. A polymer attached through (thio)hydantoin rings and amide groups obtained by reacting

(a) polyfunctional amino carboxylic acids, its amide or its ester, with

(b) polyiso(thio)cyanates which are masked or unmasked and a compound containing at least one carboxylic group or at least one carboxylic group together with at least one additional moiety selected from polyhydroxy, cyclic anhydride and isocyanurate polyisocyanates,

with the reacting proceeding with or without a non-phenolic solvent.

4,281,096

MANUFACTURING PROCESS FOR POLYURETHANE AUTO PARTS AND AUTO PARTS MANUFACTURED THEREBY

Takao Nomura, Toyota; Yoshiro Umemoto, Nagoya, and Shuichiro Takao, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 13, 1979, Ser. No. 103,398

Claims priority, application Japan, Jun. 29, 1979, 54-82509

Int. Cl.[3] **C08G** *18/18;* **C08J** *9/04;* **B29F** *1/00;* **B29D** *27/00*

U.S. Cl. 528—53 **10 Claims**

1. A process for manufacturing polyurethane based auto parts by reaction-injection molding, comprising:

(a) preparing a polyol component by blending a stabilizer combination of from 2–15 parts by weight of (A) nickel dibutyldithiocarbamate and 10 parts by weight of (B) N-mono or dimethylphenyl-N′-mono or dimethylphenyl phenylene diamine and/or (C) N,N′-diphenyl-P-phenylene diamine with a polyol and carbon black;

(b) reacting said polyol component with a polyisocyanate; and

(c) reaction-injection molding said reacted mass.

10. An auto part formulated from polyurethane prepared by the process of claim 1.

4,281,097

REACTIVE PHOSPHATE FLAME RETARDANTS

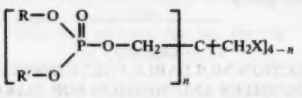
James A. Albright, Hampton, N.J., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 904,668, May 10, 1978, abandoned, which is a division of Ser. No. 811,491, Jun. 30, 1977, Pat. No. 4,133,846. This application Apr. 23, 1980, Ser. No. 142,936

Int. Cl.[3] **C08G** *18/30, 63/20*

U.S. Cl. 528—72 **5 Claims**

1. A flame retardant polymeric composition comprising a polymer selected from the group consisting of polyester and polyurethane polymers and chemically bound into the polymer a flame retarding amount of a phosphate of the formula



wherein R and R′ are independently selected from lower haloalkyls having 2 to 6 carbon atoms and 1 to 6 halogen atoms, n is an integer from 1 to 3, and wherein each X is independently selected from hydrogen, halogen, alkyl, and hydroxyl, provided that only one X is hydroxyl.

4,281,098

CONTROL OF PHENOL/ALDEHYDE CONDENSATION REACTIONS

Bryan H. McCormick, South Glamorgan, Wales, assignor to BP Chemicals Limited, London, England

Filed Oct. 24, 1979, Ser. No. 87,739

Claims priority, application United Kingdom, Oct. 25, 1978, 41922/78

Int. Cl.[3] **C08G** *8/04, 8/08, 8/10*

U.S. Cl. 528—139 **12 Claims**

1. The process for retarding or stopping the condensation reaction between a phenol and an aldehyde in the presence of a catalyst which is a Group I or Group II metal hydroxide or a strong acid which comprises adding to the reaction at an elevated temperature an aqueous solution containing at least 10% by weight based on the weight of water, of a salt of a weak acid having a pK_a in aqueous solution at 25° C. of more than 2.8 and a metal which is copper or a metal of Groups III to VIII of the Periodic Table.

4,281,099

PROCESS FOR STABILIZING POLYARYLATES WITH AN AROMATIC PHENOL

Louis M. Maresca, Belle Mead, N.J., assignor to Union Carbide Corporation, New York, N.Y.

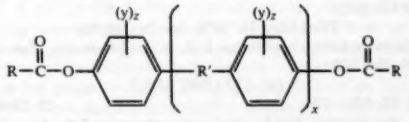
Filed Oct. 29, 1979, Ser. No. 89,270

Int. Cl.[3] **C08L** *67/02*

U.S. Cl. 528—176 **26 Claims**

1. A process for preparing a melt stable polyarylate having a reduced viscosity of from about 0.4 to greater than 1.0 dl/gm, which process comprises reacting:

(a) at least one diester derivative of a dihydric phenol having the following formula:



wherein R is independently selected from an alkyl radical having from 1 to about 6 carbon atoms, or cycloalkyl having from 4 to about 7 carbon atoms, y is independently selected from alkyl groups of 1 to 4 carbon atoms, chlorine, or bromine, z independently has a value of from 0 to 4, inclusive, and R′ is independently selected from a direct bond, a divalent saturated aliphatic hydrocarbon radical having 1 to 8 carbon atoms, a cycloalkylene or cycloalkylidene radical having up to and including 9 carbon atoms, O, S, SO, SO_2, CO, x is 0 or 1; with

(b) at least one aromatic dicarboxylic acid, at a temperature of from about 260° to about 350° C.; to form a polyarylate having a reduced viscosity of from about 0.5 to greater than 1.0 dl/g; and

(c) adding a stabilizing amount of an aromatic phenol to the polyarylate to form a polyarylate substantially free of anhydride linkages; said aromatic phenol being free of

substituents in at least one of the positions ortho to the hydroxy group.

4,281,100

INJECTION MOLDABLE POLYETHERIMIDE OLIGOMERS AND METHOD FOR MAKING

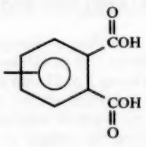
Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 37,438, May 9, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,463

Int. Cl.³ C08G *69/28, 69/32, 73/10, 73/14*

U.S. Cl. 528—188 **13 Claims**

1. Particulated substantially organic solvent-free polyetherimide amide acid prepolymer convertible under melt polymerization conditions to high molecular weight injection moldable polyetherimide which comprises the product of reaction under interfacial polymerization conditions of substantially equal molar amounts of aromatic bis(ether anhydride) and organic diamine which allows for the production of reaction product having terminal units of the formula,



which can be present at up to about 20 mole percent, based on the total moles of chemically combined units in the polyetherimide amide acid prepolymer and where the stoichiometry of the initial reactants in the reaction product is substantially maintained.

4,281,101

PROCESS FOR THE PREPARATION OF ALIPHATIC-AROMATIC POLYCARBONATES WITH DIPHENOL CARBONATE END GROUPS AND THEIR USE FOR THE PREPARATION OF HIGH-MOLECULAR, SEGMENTED, ALIPHATIC-AROMATIC POLYCARBONATE ELASTOMERS WHICH CAN BE PROCESSED AS THERMOPLASTICS

Manfred Schreckenberg, Krefeld; Klaus König, Leverkusen; Dieter Freitag, Krefeld; Günther Lehnert, Leverkusen, and Christian Lindner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

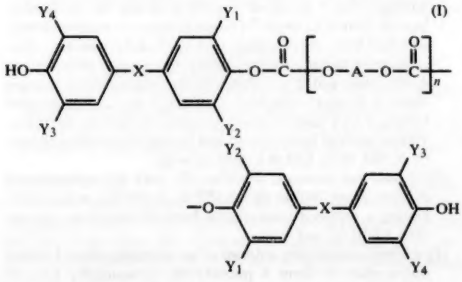
Filed May 31, 1979, Ser. No. 44,786

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827325

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—196 **25 Claims**

9. An aliphatic diol bis-diphenol carbonate of the formula

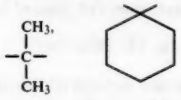


(I)

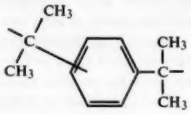
wherein

A denotes the bivalent radical of an aliphatic diol, selected from a group consisting of 1,3-propanediol, 1,4-butanediol, 1,5-pentanediol, 3-methyl-1,5-pentanediol, trimethyl-1,6-hexanediol, 1,6-hexanediol, 1,12-dodecanediol, 1,12-octadecanediol, diethylene glycol, dipropylene glycol, neopentyl glycol and prepolymeric aliphatic polycarbonate diols having a M_n between 300 and 3,000 prepared from diethylene glycol, 1,6-hexanediol, 1,4-butanediol or 1,12-dodecanediol,

X denotes a single bond, $-CH_2-$,



O, S, SO_2 or



Y_1, Y_2, Y_3 and Y_4 are identical or different and denote a hydrogen or halogen atom or a C_1 or C_4 alkyl group and n is an integer from 2 to 40.

4,281,102

TACKIFIER FOR ADDITION POLYIMIDES CONTAINING MONOETHYLPHTHALATE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, Terry L. St. Clair, Poquoson, and John M. Butler, Roanoke, both of Va.

Filed Nov. 7, 1979, Ser. No. 92,141

Int. Cl.³ C08G *12/00, 16/00, 73/10*

U.S. Cl. 528—229 **5 Claims**

1. A method of preparing a novel addition type polyimide comprising the steps of reacting by refluxing stoichrometric amounts of benzophenonetetracarboxylic acid dianhydride, norbornene dicarboxylic acid anhydride, and phthalic anhydride in an excess of ethanol at reflux temperature and while mechanically stirred for a period of time at least exceeding that required for all monomers to go into solution, cooling the resulting solution slightly and mixing an equimolar warmed solution of mixed dianilines therewith, and cooling and storing the recovered homogeneous ester-acid/amine polyimide precursor for subsequent use as a liquid resin system.

4. A liquid composition of matter consisting of 1.10 moles of 5-norbornene-2,3-dicarboxylic ethyl ester acid (NE); 0.67 moles of benzophenone tetracarboxylic diethyl ester diacid (BTDE); 0.12 moles of monoethylphthalate (MEP) and 2.56 molar equivalents of a methylenedianiline mixture.

4,281,103

DICARBOXYLIC ACIDS CONTAINING TRIAZINE RINGS, AND POLYESTERS FORMED FROM THESE DICARBOXYLIC ACIDS

Thomas Kainmüller, Lindenfels, Fed. Rep. of Germany; Jürgen Habermeier, Pfeffingen, Switzerland, and Lothar Buxbaum, Lindenfels, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 943,031, Sep. 18, 1978, Pat. No. 4,228,281. This application Jan. 28, 1980, Ser. No. 116,355

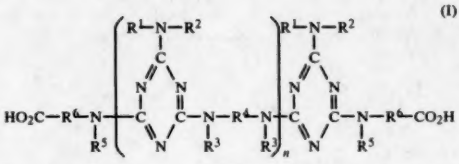
Int. Cl.³ C08G *63/68, 69/44*

U.S. Cl. 528—289 **19 Claims**

1. A linear thermoplastic polyester, which has a relative

viscosity of at least 1.2, measured on a solution of 1 gram of polyester in 100 ml. of a solvent consisting of equal parts of phenol and symmetrical tetrachloroethane at 30° C., which comprises the condensation product in about a 1:1 molar ratio of diacids (a) and (b) with diols (c) or where equimolar portions of (b) and (c) are replaced by a hydroxycarboxylic acid (d), so that the composition of the polyester comprises in the diacid component of the polyester

(a) from 50 to 0.5 mol %, relative to the total polyester, of radicals of a dicarboxylic acid of the formula I



(I)

in which

n has a value from 1 to 100,

R^1, R^2, R^3 and R^5 independently of one another are each a hydrogen atom, a straight- or branched-chain alkyl of 1 to 22 C atoms, cycloalkyl of 5 to 7 C atoms, cyclohexylmethyl, aryl of 6 to 10 C atoms, benzyl, or said cycloalkyl, said cyclohexylmethyl, said aryl or said benzyl substituted with alkyl of 1 to 4 C atoms, or

R^1 and R^2 together are alkylene of 3 to 7 C atoms, 3-oxapentylene or 3-thiapentylene,

R^4 is a straight- or branched-chain alkylene of 2 to 18 C atoms, cycloalkylene of 5 to 7 C atoms, arylene of 6 to 10 C atoms, cycloalkylenealkylne or cycloalkylenebisalkylene with 1 to 4 C atoms in the alkylene group, arylenealkylene or arylenebisalkylene with 1 to 4 C atoms in the alkylene group; or said cycloalkylene, said cycloalkylenealkylene or said cycloalkylenebisalkylene substituted with alkyl of 1 to 4 C atoms, or said arylene, said arylenealkylene or said arylenebisalkylene substituted by alkyl of 1 to 6 C atoms or by halogen, or

R^4 is phenylene-X-phenylene where X is a direct bond, O, S, SO_2, alkylene of 1 to 3 C atoms, alkylidene of 2 to 12 C atoms, cycloalkylidene of 5 to 6 C atoms, benzylidene, bisphenylmethylidene, 1,1,1-trichloroethylidene or —O—p-phenylene-O—, or

R^4 together with one R^3 and the N atom to which they are bound form a ring having 4 to 7 C atoms, or R^4, and also both R^3s together, are alkylene groups having 1 to 5 C atoms, and forming together with the two N atoms a 5- to 7-membered ring, and

R^6 is a straight- or branched-chain alkylene or alkylidene of 1 to 12 C atoms, o-phenylene, m-phenylene, p-phenylene, p-benzylene or p-cyclohexylene; and

(b) from 0 to 49.5 mol %, relative to the total polyester, of radicals of at least one aliphatic, cycloaliphatic or aromatic dicarboxylic acid or mixture thereof; and in the diol component of the polyester

(c) 50 mol % relative to the total polyester, of radicals of at least one aliphatic, cycloaliphatic or aromatic diol of mixture thereof; or

where equimolar amounts of (b) and (c) are replaced by (d) so that the polyester contains, relative to the total polyester, from 50 to 0.5 mol % of component (a); from 0 to 49.5 mol % of component (b); from 50 to 0.5 mol % of component (c); and

(d) from 0 to 99 mol % of radicals of at least one aliphatic, cycloaliphatic or aromatic hydroxycarboxylic acid,

wherein the radicals (a), (b), (c) and (d) are attached when (b) or (d) are present through ester linkages in a random distribution.

4,281,104

LINEAR RANDOM COPOLYESTER PIGMENT BINDERS

Maya Agarwal, Seaford, Del., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 15, 1980, Ser. No. 121,756
Int. Cl.³ C08G *63/16*
U.S. Cl. 528—302 **4 Claims**

1. As compositions of matter, linear random copolyesters having intrinsic viscosities of at least 0.4 deciliters per gram as determined in a 60/40 by volume mixed solvent system of phenol and tetrachloroethane at 30° C., said copolyesters being essentially free of cyclic oligomeric contaminants and which are suitable for preparing clear solvent based adhesive solutions for bonding metallic oxide pigments to magnetic tape substrates, said copolyesters comprising the polymeric reaction product of a mixture of reactants consisting of

(a) ethylene glycol,

(b) the ester glycol, neopentyl glycol hydroxypivalate,

(c) terephthalic acid or a lower C_1–C_4 dialkyl ester thereof,

(d) phthalic acid or phthalic anhydride, and

(e) an aliphatic dicarboxylic acid selected from the group consisting of unsubstituted and lower alkyl substituted aliphatic dicarboxylic acids containing from 5 to 12 carbon atoms in the linear chain or lower C_1–C_4 dialkyl esters thereof in which mixture the amount of ethylene glycol ranges from 60 to 90 mol percent and the amount of neopentyl glycol hydroxypivalate ranges from 10 to 40 mol percent, said percentages being based on the total mols of glycol components in the mixture and in which mixture the amount of terephthalic acid or lower C_1–C_4 dialkyl ester thereof ranges from 50 to 60 mol percent, the amount of phthalic acid or phthalic anhydride ranges from 15 to 30 mol percent and the amount of aliphatic dicarboxylic acid or lower C_1–C_4 ester thereof ranges from 15 to 30 mol percent said percentages being based on the total mols of the acid constituents or reactive equivalents thereof in said mixture.

4,281,105

FORMATION OF PARTICULATE POLYPYRROLIDONE

Carl E. Barnes, 482 Trinity Pass, New Canaan, Conn. 06840, and Arthur C. Barnes, 320 Stamford Ave., Stamford, Conn. 06902

Continuation-in-part of Ser. No. 104,675, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 39,773, May 17, 1979, Pat. No. 4,217,442, which is a continuation-in-part of Ser. No. 899,066, Apr. 24, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,561
Int. Cl.³ C08G *69/24*
U.S. Cl. 528—313 **9 Claims**

1. A process for forming particulate polypyrrolidone comprising heating at a temperature of from about 20° to about 70° C. an anhydrous mixture comprising 2-pyrrolidone, an alkaline polymerization catalyst, a polymerization accelerator selected from the group consisting of quaternary ammonium sulfates and bisulfates and a polymerization initiator selected from the group consisting of CO_2, SO_2 and MoO_3 thereby causing the formation of a friable gel phase of short duration as the polymerization proceeds and agitating the mass while in this phase.

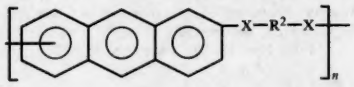
4,281,106

HEAT-RESISTANT, RIGID POLYMERS FROM DIFUNCTIONAL 9,10-DIHYDRO-9,10-ETHANOANTHRACENES

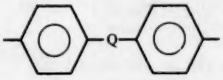
Burton C. Anderson, and August H. Frazer, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 12, 1979, Ser. No. 57,113
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—344 **10 Claims**

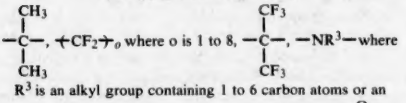
10. A polymer, in the form of a shaped article, consisting essentially of repeating units of the structure



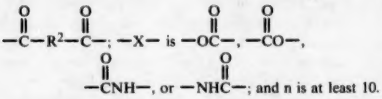
wherein —R^2— is an alkylene group containing 2 to 14 carbon atoms, an arylene group containing 6 to 14 carbon atoms, an alkyl-substituted or chloro-substituted arylene group containing 6 to 14 carbon atoms, a cycloalkylene group containing 4 to 14 carbon atoms, or



where —Q—is —O—, —OCH_2CH_2O—, ,



R^3 is an alkyl group containing 1 to 6 carbon atoms or an aryl group containing 6 to 12 carbon atoms, —S—, or



—CNH—, or —NHC—; and n is at least 10.

4,281,107

NEAMINE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Tetsuo Suami, No. 5-8, Naka-machi 3-chome, Musashino-shi, Tokyo, Japan

Filed May 20, 1977, Ser. No. 799,017
Claims priority, application Japan, May 28, 1976, 51/61247
Int. Cl.³ C07H *15/22*
U.S. Cl. 536—17 R **5 Claims**

1. 5,6-Dideoxyneamine.

4,281,108

PROCESS FOR OBTAINING LOW MOLECULAR WEIGHT HEPARINS ENDOWED WITH ELEVATED PHARMACOLOGICAL PROPERTIES, AND PRODUCT SO OBTAINED

Fernando Fussi, Lesmo, Italy, assignor to Hepar Industries, Inc., Franklin, Ohio

Continuation-in-part of Ser. No. 115,778, Jan. 28, 1980, abandoned. This application Jun. 2, 1980, Ser. No. 155,674
Int. Cl.³ C08B *37/10*
U.S. Cl. 536—21 **7 Claims**

1. A process for obtaining low molecular weight heparins endowed with elevated pharmacological properties, comprising the following steps:

(a) acidification of normal heparin to obtain heparinic acid,

(b) depolymerization of said heparinic acid by heating in the presence of peroxides, to obtain a low molecular weight heparamine of molecular weight approximately 4000 D to 12,000 D,

(c) sulphation of said heparamine to obtain the corresponding low molecular weight heparin.

4,281,109

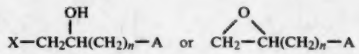
POLLUTION-FREE CATIONIZATION OF STARCH

Wadym Jarowenko, Green Brook, and Daniel B. Solarek, Somerville, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

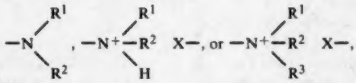
Filed Mar. 3, 1980, Ser. No. 126,229
Int. Cl.³ C08B *31/08, 31/10*
U.S. Cl. 536—50 **11 Claims**

1. A method for preparing a cationic starch comprising

(a) spraying a starch having a moisture content of less than about 30% by weight or a starch filter cake having a moisture content of about 46% or less by weight with a catalyst-reagent mixture comprising an aqueous solution of an alkali catalyst and an etherifying halohydrin or epoxide reagent having the structural formula



wherein A is



X is a halogen atom, R^1 and R^2 are independently selected from the group of C_1-C_4 straight or branched alkyl radicals or they are joined to form a cyclic structure and R^3 is a C_1–C_4 straight or branched alkyl radical, with the proviso that the total number of carbon atoms in R^1, R^2, and R^3 does not exceed 8, and n is 1-3, said reagent being combined with said alkali catalyst immediately prior to the spraying step; and

(b) reacting the sprayed starch in a dry or substantially dry state at a pH of at least 11.

4,281,110

PROCESS FOR THE PRODUCTION OF BROKEN DOWN LIGNIN-CELLULOSE SILICATE COPOLYMERS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

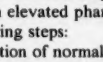
Continuation-in-part of Ser. No. 112,290, Jan. 15, 1980, which is a continuation-in-part of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757. This application Nov. 3, 1980, Ser. No. 203,730
Int. Cl.³ C08B *31/00*
U.S. Cl. 536—84 **16 Claims**

1. The process for the production of broken down lignin-cellulose silicate copolymer by mixing and reacting the following components:

Component (a) chemically broken down alkali metal lignin-cellulose silicate polymer.

Component (b) an organic compound having the graphical skeleton carbon structure of where

represents two adjacent carbon atoms, or



where X and X represent the substituents which splet off during the reaction. The R between the pair of reactive carbon atoms is selected from the following groups: saturated straight chain carbon atoms, unsaturated carbon atoms, ether linkages and aromatic structures. The X and X substituents can be halogen, acid sulfate, nitrate, acid phosphate, bicarbonate, formate, acetate, propionate, laurate, oleate, stearate, oxalate, acid malonate, acid tartrate and acid citrate.

4,281,111
COLD WATER HYDRATING STARCH

Walter G. Hunt, Bridgeton, Mo.; Leslie P. Kovats, Granite City, Ill., and Edward M. Bovier, St. Louis County, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Continuation-in-part of Ser. No. 919,961, Jun. 28, 1978, abandoned. This application Oct. 25, 1979, Ser. No. 87,827

Int. Cl.[3] **C08G** *59/40*

U.S. Cl. 536—111 **16 Claims**

1. A process of preparing a cold water hydrating starch comprising the steps of:

A. reacting an acidic aqueous starch slurry with a source of active chlorine in which the active chlorine is present in amount of from about 0.1 to about 1.0% based on weight of starch at a temperature and time sufficient to produce a cross-linked intermediate starch product which is not degraded or depolymerized and has decreased solubility,

B. reacting the intermediate product with propylene oxide, and

C. recovering a cold water hydrating hydroxypropyl starch product having about 15–20% hydroxypropyl content.

4,281,112
PROCESS FOR THE PREPARATION OF CATIONIC DYESTUFFS

Klaus-Friedrich Lehment, Odenthal; Roderich Raue, Leverkusen, and Harald Gleinig, Odenthal-Neschen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

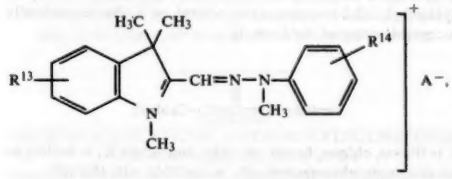
Filed Jul. 17, 1980, Ser. No. 169,582

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931687

Int. Cl.[3] **C07D** *209/14*

U.S. Cl. 542—417 **10 Claims**

1. Process for the preparation of cationic hydrazone dyestuffs of the general formula

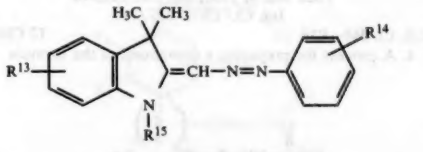


wherein

R^{13} and R^{14} independently of one another represent hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy or halogen, in particular chlorine or bromine, and

A^- denotes an anionic radical,

by reacting azo bases of the general formula



wherein

R^{13} and R^{14} have the abovementioned meaning and

R^{15} represents hydrogen or the methyl group, with dimethyl sulphate in a mixture of water and an organic solvent and in the presence of an acid-binding agent, characterised in that (a) aromatic or aliphatic chlorinated hydrocarbons are used as the organic solvents, (b) the reaction is carried out at a temperature of 10°–60° C., (c) a 5–90% excess of dimethyl sulphate is employed and (d) the reaction is allowed to proceed at a pH of 5–10.

4,281,113
2,5-INTER-O-PHENYLENE-3,4-DINOR-6,9α-EPOXY-6β-5-IODO-PGF$_1$ COMPOUNDS

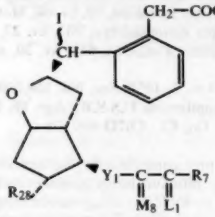
Udo F. Axen, Plainwell, and John C. Sih, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 62,443, Jul. 31, 1979, which is a continuation-in-part of Ser. No. 962,845, Nov. 22, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,595

Int. Cl.[3] **C07D** *307/935*

U.S. Cl. 542—426 **1 Claim**

1. A prostacyclin intermediate of formula VIII



wherein R_{28} is $—OR_{10}$, $—CH_2OR_{10}$, hydroxy, hydroxymethyl, or hydrogen, wherein R_{10} is a blocking group removable by mild acidic hydrolysis;

wherein Y_1 is

(1) trans-CH=CH—,

(2) cis-CH=CH—,

(3) $—CH_2CH_2—$, or

(4) $—C\equiv C—$,

wherein M_8 is α-R_5:β-OR_{10} or α-OR_{10}:β-R_5, wherein R_5 is hydrogen or methyl and R_{10} is as defined above, or α-R_5:β-OH or α-OH:β-R_5, wherein R_5 is as defined above;

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro:

wherein R_7 is

(1) $—(CH_2)_m—CH_3$, wherein m is an integer from one to 5, inclusive;

(2) phenoxy;

(3) phenoxy substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(4) phenyl;

(5) phenyl substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(6) phenylmethyl, phenylethyl, or phenylpropyl; or

(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, 2 or 3 chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein R_1 is

(1) hydrogen;

(2) alkyl of one to 12 carbon atoms, inclusive;

(3) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(4) aralkyl of 7 to 12 carbon atoms, inclusive;

(5) phenyl;

(6) phenyl substituted with one, 2 or 3 chloro or alkyl of one to 3 carbon atoms;

(7) phenyl substituted in the para position by

(a) —NH—CO—R_{25}

(b) —CO—R_{26}

(c) —O—CO—R_{27}

(d) —CH=N—NH—CO—NH_2

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is hydroxy, methyl, phenyl, —NH_2, or methoxy; and R_{27} is phenyl or acetamidophenyl, inclusive, or a pharmacologically acceptable salt thereof when R_1 is hydrogen.

4,281,114

METHOD FOR PREPARING DIFURFURYLIDENEACETONE OLIGOMER

Juldash Mamatov, ulitsa Pushkina, 50, kv. 60; Makhammadzhon Akhmadaliev, ulitsa Kuvasaiskaya, 203, kv. 27, and Vladimir S. Kozhevnikov, ulitsa Pushkina, 64b, kv. 20, all of Fergana, U.S.S.R.

Filed Apr. 2, 1980, Ser. No. 136,699

Claims priority, application U.S.S.R., Apr. 10, 1979, 2741301

Int. Cl.³ C07D *409/14*

U.S. Cl. 542—432 **1 Claim**

1. A method for preparing difurfurylideneacetone oligomer comprising heating difurfurylideneacetone with a moisture content of from 15 to 40% at a temperature ranging from 80° to 90° C. under progressively increasing vacuum from the atmospheric pressure to 180–200 mm Hg, adding a catalyst selected from the group consisting of hydroxides of alkali and/or alkali-earth metals at a weight ratio of difurfurylideneacetone to the catalyst of 1:0.005–0.04, followed by oligomerization of difurfurylideneacetone at a temperature ranging from 180° to 220° C.

4,281,115

3-DICYANOMETHYLIDENE-2,3-DIHYDROTHIOPHEN-1,1-DIOXIDE DERIVATIVES

Werner Baumann, Therwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

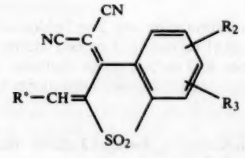
Filed Jul. 25, 1979, Ser. No. 60,745

Claims priority, application Switzerland, Jul. 28, 1978, 8151/78

Int. Cl.³ C07D *333/52, 409/06*

U.S. Cl. 542—441 **16 Claims**

1. A disperse dyestuff of the formula



in which

R° is a group of the benzene, indoline or hydroquinoline series,

R_2 is hydrogen, chlorine, bromine, hydroxy, amino, (C_{1-2})alkyl, phenyl, (C_{1-2})alkoxy, phenoxy, cyano, nitro, (C_{1-4})alkylsulphonyl, aminosulphonyl, mono- or di-(C_{1-4})alkylaminosulphonyl, phenylaminosulphonyl, N-phenyl-N-(C_{1-2})alkylaminosulphonyl, alkoxy(C_{1-6}) carbonyl, phenoxycarbonyl, aminocarbonyl, mono- or di(C_{1-4})alkylaminocarbonyl, phenylaminocarbonyl, N-phenyl-N-(C_{1-2})alkylaminocarbonyl, alkyl(C_{1-6})carbonyloxy, chloro- or bromo-(C_{1-2})alkylcarbonyloxy, (C_{1-2})alkoxy(C_{2-6})alkoxy carbonyloxy, phenoxycarbonyloxy, (C_{1-4})alkylsulphonyloxy, phenylsulphonyloxy, alkyl(C_{1-4})carbonylamino, alkoxy(C_{1-2})alkoxy(C_{2-4})carbonylamino, chloro- or bromo-alkyl(C_{1-2})carbonylamino, alkoxy(C_{1-4})-carbonylamino, phenoxycarbonylamino, aminocarbonylamino, mono- or di-(C_{1-4})-alkylaminocarbonylamino, phenylaminocarbonylamino, N-phenyl-N-(C_{1-2})alkylaminocarbonylamino, benzoyloxy, naphthoyloxy, benzoylamino, di-(C_{1-4})alkylaminosulphonyloxy, mono- or di-(C_{1-4})alkylaminocarbonyloxy or phenylaminocarbonyloxy,

and R_3 is hydrogen, chlorine, bromine, (C_{1-2})alkyl, (C_{1-2})alkoxy or alkoxy(C_{1-4})carbonyl.

4,281,116

3-HALO CEPHALOSPORINS

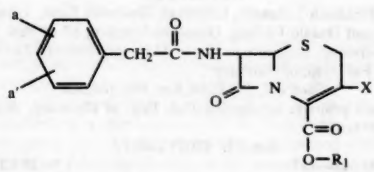
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 84,228, Oct. 12, 1979, which is a division of Ser. No. 784,770, Apr. 5, 1977, Pat. No. 4,208,515, which is a division of Ser. No. 656,240, Feb. 9, 1976, Pat. No. 4,064,343, which is a division of Ser. No. 457,150, Apr. 1, 1974, Pat. No. 3,962,227, which is a continuation-in-part of Ser. No. 335,414, Feb. 23, 1973, abandoned. This application Jul. 2, 1980, Ser. No. 165,462

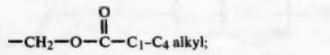
Int. Cl.³ C07D *501/20*

U.S. Cl. 544—16 **4 Claims**

1. A compound of the formula



wherein a and a' independently are hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, hydroxy, nitro, amino, or carboxy; R_1 is hydrogen, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, t-butyl, or a pharmaceutically acceptable ester of the formula



X is fluoro, chloro, bromo or iodo; and when R_1 is hydrogen the non-toxic pharmaceutically acceptable salts thereof.

4,281,117

PROCESS FOR 3-CHLORO CEPHALOSPORIN NUCLEUS

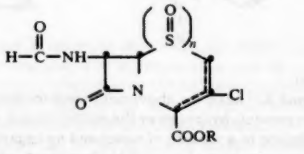
Pamela A. Chauvette, and Robert R. Chauvette, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 4, 1980, Ser. No. 183,918

Int. Cl.³ C07D *501/04*

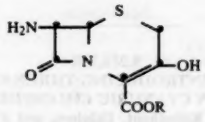
U.S. Cl. 544—016 **12 Claims**

1. A process for preparing a compound of the formula



which comprises the steps

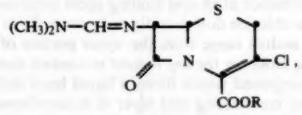
a. reacting a 7-amino-3-hydroxy-3-cephem ester of the formula



in substantially dry dimethylformamide at a temperature between about 15° C. and about 60° C. with between about 2 moles and about 6 moles of a chlorinating agent selected from the group consisting of phosphorus trichloride, phosgene, oxalyl chloride, thionyl chloride, or a sulfonyl chloride of the formula

$$R_2—SO_2—Cl,$$

b. recovering from said reaction a 7β-dimethylamidino-3-chloro-3-cephem ester of the formula



and

c. adding to a solution of said 7β-amidino-3-chloro ester in an inert organic solvent at a temperature between about 20° C. and about 45° C. a carboxylic acid, percarboxylic acid, or a phenol each having a pH in water of between about 2 and about 5, wherein R in the above formulae is a carboxy-protecting group, n is 0 or 1, and when n is 0 the dotted bond indicates a double bond in the 2,3- and 3,4-positions, and when n is 1 the double bond is in the 3,4-position; and R_2 is C_1–C_4 alkyl, phenyl, or phenyl substituted by halogen or methyl, provided that, when n is 1, said percarboxylic acid is added in step c, and when n is 0, said carboxylic acid or said phenol is added in step c.

4,281,118

AMINOALKYLSULFIDES, AMINOALKYLSULFOXIDES, AND AMINOALKYLSULFONES

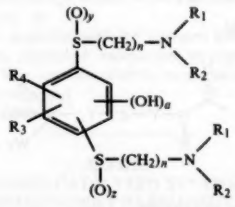
Joseph E. Dunbar, and Louis E. Begin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 18, 1979, Ser. No. 49,029

Int. Cl.[3] **C07D** *413/12, 295/08;* **A61K** *31/535, 31/445*

U.S. Cl. 544—85 **8 Claims**

1. A compound of the formula



wherein y and z independently represent the integer 0, 1 or 2; a represents the integer 0; n represents the integer 1, 2, 3 or 4; R_1 and R_2 taken together with the adjacent nitrogen atom represent morpholino; R_3 represents halo, 4-morpholinyllower-alkylthio, or lower alkyl; R_4 represents hydrogen and further including the pharmaceutically-acceptable salts thereof.

4,281,119

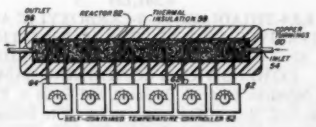
CRYOGENICALLY CONTROLLED DIRECT FLUORINATION PROCESS, APPARATUS AND PRODUCTS RESULTING THEREFROM

Richard J. Lagow, Manchester; James L. Adcock, and Norma J. Maraschin, both of Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 379,876, Jul. 16, 1973, Pat. No. 4,113,345. This application Jun. 23, 1976, Ser. No. 699,291

Int. Cl.[3] **C07D** *265/30;* **C07B** *9/00*

U.S. Cl. 544—106 **10 Claims**



1. A direct fluorination process for fluorinating a reactant with elemental fluorine, comprising:

a. providing a packed column fluorination reactor having a multiplicity of temperature zones independently controllable to a temperature within a range of about −190° C. to about +20° C.;

b. lowering the temperature of a first zone below the condensation point of the reactant to be fluorinated;

c. introducing said reactant to be fluorinated into said first zone while it is maintained at the lowered temperature whereby said reactant condenses on the column packings in said first zone;

d. introducing a source of elemental fluorine and an inert gas into said first zone, the source of elemental fluorine initially comprising a very small percentage of said mixture and which gradually rises as fluorination proceeds;

e. maintaining the temperature of said first zone until at least partial fluorination of the condensed reactant has occurred;

f. raising the temperature in said first zone to volatilize said partially fluorinated reactant and lowering the temperature in a second zone below the freezing point of said partially fluorinated reactant whereby the partially fluorinated reactant is transported to said second zone wherein it condenses on the column packings therein; and,

g. repeating step f. until said reactant has been fluorinated to the desired degree.

4,281,120

7H-1,3,4-THIADIAZOLO-[3,2-A]-PYRIMIDIN-7-ONE-5-CARBOXYLIC COMPOUNDS

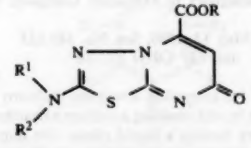
Siegfried Herrling, Dohlenweg 33, 5190 Stolberg, Fed. Rep. of Germany

Filed Dec. 12, 1978, Ser. No. 968,826

Int. Cl.[3] **C07D** *513/04*

U.S. Cl. 544—117 **8 Claims**

1. Heterocyclic compounds of the following general formula (I)



(I)

wherein R represents hydrogen or an alkyl radical with 1 to

5 carbon atoms, R^1 and R^2, which may be the same or different, represent alkyl radicals with 1 to 5 carbon atoms or together with the nitrogen atom to which they are attached form a 5- to 7-membered heterocyclic ring which may be substituted by one or more alkyl groups containing 1 to 3 carbon atoms which may also be interrupted by an oxygen or a sulfur atom or a R^3-N< group, wherein R^3 represents an alkyl radical with 1 to 4 carbon atoms, a monocyclic aryl radical or an aralkyl radical with 1 or 2 carbon atoms in the alkylene group

and the pharmaceutically acceptable salts thereof.

4,281,121

1,3,4-THIADIAZOLE-2-CARBOXYLIC ACID DERIVATIVES, PROCESS FOR MAKING THE SAME AND FUNGICIDAL AND NEMATOCIDAL COMPOSITIONS CONTAINING SAME

Ludwig Nüsslein; Dietrich Baumert, and Ernst A. Pieroh, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

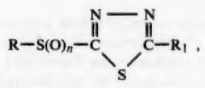
Filed Dec. 6, 1979, Ser. No. 101,061

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2853196

Int. Cl.³ C07D *285/12, 417/06*

U.S. Cl. 544—134 **182 Claims**

1. 1,3,4-thiadiazole-2-carboxylic acid derivatives of the formula



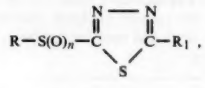
I

wherein R is C_1–C_6-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkinyl or C_3–C_6-cycloalkyl,

R_1 is C_1–C_6-alkoxycarbonyl, aminocarbonyl, C_1–C_8-alkylaminocarbonyl, C_3–C_6-cycloalkylaminocarbonyl, di-C_1–C_8-alkylaminocarbonyl, cyclohexylmethylaminocarbonyl, methoxy-C_2–C_3-alkylaminocarbonyl, morpholinocarbonyl, pyrrolidinocarbonyl, piperidinocarbonyl or cyano,

and n is 0,1 or 2.

2. 1,3,4-thiadiazole-2-carboxylic acid derivatives of the formula



I

wherein R is C_1–C_6-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkinyl or C_3–C_6-cycloalkyl,

R_1 is allylaminocarbonyl, N,N-trimethylene aminocarbonyl or cyclooctylaminocarbonyl and

n is 0,1 or 2.

4,281,122

PREPARATION OF SODIUM DICHLORO-S-TRIAZINE TRIONE COMPOSITIONS

Stephen M. Balaban, Chesterfield, Mo., and Raymond C. Cox, Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed May 12, 1980, Ser. No. 149,213

Int. Cl.³ C07D *251/36*

U.S. Cl. 544—190 **12 Claims**

1. In a process for preparing a sodium dichloro s-triazine trione composition by chlorinating a sodium s-triazine trione in an aqueous mixture having a liquid phase, the improvement which comprises maintaining the triazine compounds in said mixture essentially completely dissolved in said liquid phase and the amount of water in said mixture below about 65% by weight.

4,281,123

PROCESS FOR INTRODUCING THREE SUBSTITUENTS IN CYANURIC CHLORIDE

Klaus Hentschel, Kalmthout, Belgium, and Friedrich Bittner, Bad Soden, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,873

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850338

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ C07D *251/46, 251/52, 251/66, 251/70*

U.S. Cl. 544—194 **28 Claims**

1. A process for the replacing the three chlorine atoms of cyanuric chloride by reacting cyanuric chloride with a compound which reacts with the chlorine atoms of cyanuric chloride in the presence of an acid binding agent comprising spraying cyanuric chloride downwardly and outwardly at a temperature in its molten range from the upper portion of a tertical tubular zone closed at the top thereof to contact and mix with the other compound which forms a liquid layer defining said tubular zone, constricting said layer in breast-shaped manner downwardly below the place of entry of the cyanuric chloride into the tubular zone to form a narrower discharge opening, discharging said other compound as a spray tangentially to said layer and directed slightly upwardly in the direction of the closed top above said constriction and below the point of introduction of the cyanuric chloride and thereby forming said liquid layer along the entire tubular zone to the point of introduction of the cyanuric chloride, whereby the thickness of said layer where it is formed into a breast-shaped constriction is greater than it is in the remainder of the tubular zone.

4,281,124

REACTIVE QUATERNARY COMPOUNDS, THEIR PREPARATION AND THEIR USE FOR INCREASING THE AFFINITY OF ANIONIC DYESTUFFS FOR FIBRES WHICH CONTAIN NITROGEN OR HYDROXYL GROUPS

Bernd Berger-Lohr; Karl H. Schündehütte, and Manfred Söll, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

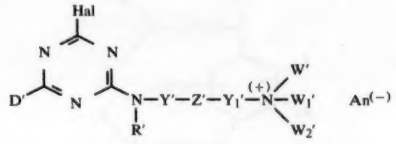
Filed Nov. 29, 1979, Ser. No. 99,116

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853881

Int. Cl.³ C07D *251/50, 251/42, 295/10*

U.S. Cl. 544—208 **4 Claims**

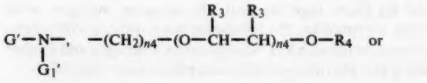
1. A compound of the formula



wherein

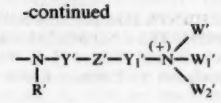
Hal is fluorine or chlorine,

D' is



or

-continued



$An^{(-)}$,

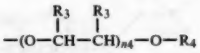
G' and G'_1 each independently is hydrogen, C_1–C_4-alkyl, phenyl or benzyl, which are optionally substituted by hydroxyl,

n_4 each independently is a number from 0 to 4,

one of the radicals R_3 is hydrogen and the other is hydrogen or methyl,

R_4 is hydrogen or C_1–C_4-alkyl,

R' is hydrogen or C_1–C_4-alkyl which can be substituted by



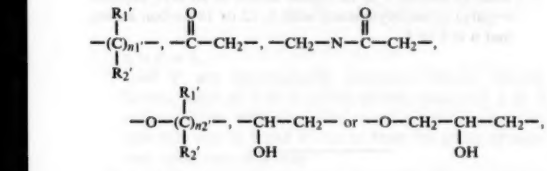
Y' is

R'_1 and R'_2 each independently is hydrogen or C_1–C_4-alkyl,

n is 0 or 1,

Z' is phenylene or naphthylene which is optionally substituted by fluorine, chlorine, bromine, hydroxyl, C_1–C_4-alkyl or C_1–C_4-alkoxy,

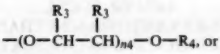
Y'_1 is a radical of the formula



n'_1 is 1 or 2,

n'_2 is 2 or 3,

W', W'_1 and W'_2 each independently is C_1–C_6-alkyl which can be substituted by



W' also may be benzyl, amino, C_1–C_4-alkylamino or C_1–C_4-dialkylamino, or

W'_1 and W'_2, together with the nitrogen atom, may form a pyrrolidine, piperidine, morpholine or piperazine ring, or

W', W'_1 and W'_2, together with the nitrogen atom, may form a pyridine ring, and

$An^{(-)}$ is an anion.

4,281,125

QUINOLINE CATALYZED SYNTHESIS OF PYRIDAZINONE PHARMACEUTICAL INTERMEDIATES

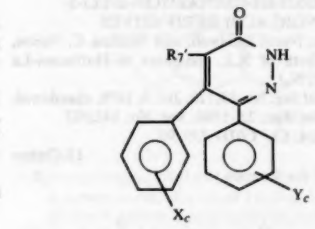
Michael F. DePompei, and Alex Hlynsky, both of Mentor, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 15, 1980, Ser. No. 149,918

Int. Cl.³ C07D *237/14, 237/24, 237/22, 237/18*

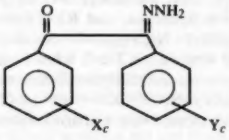
U.S. Cl. 544—239 **24 Claims**

1. A process for the preparation of a compound of the general formula:



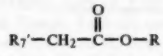
(Ia)

wherein R'_7 is acetyl, cyano, phenylsulfonyl, $(C_1$–$C_4)$alkylhydrazono, naphthyl, phenyl or phenyl substituted with at least one substituent selected from the group consisting of halogen, C_1–C_6 alkylamino and C_1–C_4 alkoxy; and X_c and Y_c are the same or different and are independently selected from the group consisting of halogen, C_1–C_4 alkyl and C_1–C_4 alkoxy where c is 0, 1 or 2; which comprises the quinoline catalyzed reaction of a monohydrazone of the formula:



(II)

wherein X_c and Y_c are defined as above, with a substituted acetic acid ester of the formula:



(III)

wherein R'_7 is defined as above and R is an alkyl group, in a suitable organic solvent, at elevated temperature.

4,281,126

N-SUBSTITUTED 1,2,3,4-TETRAHYDROPYRIMIDINES, HEXAHYDROPYRIMIDINES AND PROCESS FOR THEIR PREPARATION

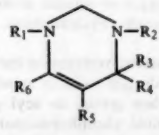
Bernardus A. Oude Alink, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jan. 30, 1978, Ser. No. 873,322

Int. Cl.³ C07D *239/04, 239/06*

U.S. Cl. 544—242 **12 Claims**

1. A compound of the formula



where R_1 and R_2 are substituted groups and R_3, R_4, R_5 and R_6 are hydrogen, alkyl, alkenyl, aryl, aralkyl, cycloalkyl or heterocyclic.

4,281,127
TRANS-3-(4-OXO-4H-QUINAZOLIN-3-YL)-2-PROPENOIC ACID DERIVATIVES

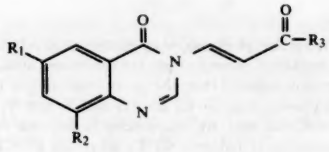
Ronald A. LeMahieu, North Caldwell, and William C. Nason, Mountain Lakes, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 55,728, Jul. 9, 1979, abandoned. This application Apr. 23, 1980, Ser. No. 142,903

Int. Cl.³ C07D *239/90*

U.S. Cl. 544—287 **12 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl, lower cyclo-(C_3–C_7)-alkyl, lower alkoxy, hydroxy, halo, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, di-(C_1–C_7)alkyl $N(CH_2)_nO$— or 2-hydroxyethoxy; R^2 is hydrogen; and R_3 is hydroxy, lower alkoxy, di-(C_1–C_7)alkyl $N(CH_2)_nO$— or di-(C_1–C_7)alkyl $N(CH_2)_nNH$—; and wherein n is 2 to 7, when R_3 is hydroxy, a salt thereof with a pharmaceuticallly acceptable base, or when R_3 is di-(C_1–C_7)alkyl-$N(CH_2)_nO$— or di-(C_1–C_7)alkyl-$N(CH_2)_nNH$—, a salt thereof with a pharmaceutically acceptable acid.

4,281,128
BISPIPERAZIDO PHOSPHORUS COMPOUNDS

Johny C. Hermans, Wespelaar, Belgium, assignor to s.a. Texaco Belgium n.v., Brussels, Belgium

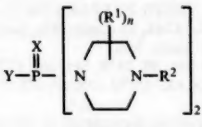
Division of Ser. No. 628,288, Nov. 3, 1975, Pat. No. 4,081,445. This application Nov. 18, 1977, Ser. No. 852,879

Claims priority, application United Kingdom, May 21, 1975, 21796/75

Int. Cl.³ C07D *295/16*

U.S. Cl. 544—337 **5 Claims**

1. A compound of the formula:



and salts of such compounds, wherein

X represents an oxygen or sulphur atom or is absent;

Y represents an aliphatic, cycloaliphatic, or aromatic hydrocarbon group;

R^1 represents an inert substituent on the piperazine ring;

R^2 represents a hydrogen atom or an aliphatic or cycloaliphatic hydrocarbon group, an acyl group, a sulphonyl group, a substituted phosphorus-containing group, or a substituted carbamoyl group; and

n represents 0 or an integer; and

salts of such compounds in which at least one of the groups R^2 represents a hydrogen atom.

4,281,129
PIPERIDINYL HYDROGEN 2-HYDROXYALKYL PHOSPHATES AND METAL SALTS THEREOF

Gether Irick, Jr., and Richard H. S. Wang, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

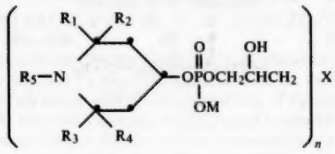
Division of Ser. No. 963,716, Nov. 27, 1978, Pat. No. 4,194,989. This application Oct. 2, 1979, Ser. No. 81,231

The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.

Int. Cl.³ C07D *211/46, 211/94*

U.S. Cl. 546—6 **12 Claims**

1. A piperidinyl phosphate having the formula:



wherein R_1 and R_2 are each alkyl having 1–6 carbons; R_3 and R_4 are each alkyl having 1–6 carbons or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring which is unsubstituted or substituted with a methyl group; R_5 is hydrogen, oxy, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 or 4 carbon atoms, propargyl, benzyl or alkyl substituted benzyl; M is either hydrogen or a metal ion selected from the group consisting of Li, Na, K, Mg, Ca, Ba, Mn, Co, Ni, Sn, Zn, Ce; X is an alkyl, alkylene, oxyalkyl or oxyalkyleneoxy having 2 to 12 carbon atoms or an aryl, arylene, oxyaryl or oxyaryleneoxy with 6, 12 or 18 carbon atoms; and n is 1 to 4.

4,281,130
LOWER-ALKYL 4,6,7,8,8A-9-HEXAHYDRO-6,9-ETHANOTHIENO [3,2-f]INDOLIZINE-10-CARBOXYLATE

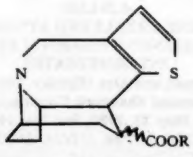
Robert L. Clarke, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 41,907, May 24, 1979, Pat. No. 4,214,084, which is a division of Ser. No. 894,894, Apr. 10, 1978, Pat. No. 4,179,567. This application Oct. 26, 1979, Ser. No. 88,536

Int. Cl.³ C07D *513/22, 513/18*

U.S. Cl. 546—63 **2 Claims**

1. A compound of the formula



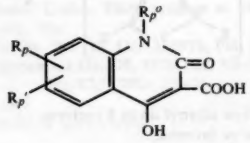
wherein R is alkyl of 1 to 3 carbon atoms; or a pharmaceutically acceptable acid-addition salt thereof.

4,281,131
4-HYDROXY-2-QUINOLINONE-3-CARBOXYLIC ACIDS AND SALTS THEREOF

Goetz E. Hardtmann, Morristown, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

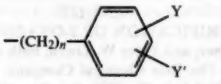
Division of Ser. No. 807,914, Jun. 20, 1977, Pat. No. 4,187,309. This application Jul. 16, 1979, Ser. No. 57,962
The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.
Int. Cl.³ C07D *491/056, 215/22*
U.S. Cl. 546—90 32 Claims

1. A compound having in free acid form the formula:



wherein

R_p^o is alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



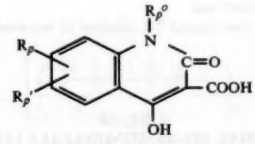
n is 0 or 1,

Y and Y′ are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, trifluoromethyl or nitro with the proviso that only one of Y and Y′ can be from the group of nitro and trifluoromethyl, and

R_p and R_p' are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl, with the proviso that only one of R_p and R_p' can be from the group consisting of nitro and trifluoromethyl,

with the further proviso that the unsaturation in any alkenyl or alkynyl is on other than the alpha carbon atom; or a mono- or di-salt form thereof in which the salt forming cation is a pharmaceutically acceptable cation.

20. A compound having in free acid form the formula:

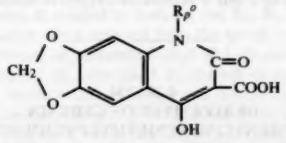


wherein

R_p^o is alkyl of 1 to 6 carbon atoms, and

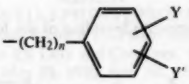
R_p and R_p' are independently alkoxy of 1 to 4 carbon atoms; or a mono- or di-salt form thereof in which the salt forming cation is a pharmaceutically acceptable cation.

25. A compound having in free acid form the formula:



wherein

R_p^o is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



n is 0 or 1, and

Y and Y′ are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, trifluoromethyl or nitro, with the proviso that only one of Y and Y′ can be from the group consisting of nitro and trifluoromethyl,

with the further proviso that the unsaturation in any alkenyl or alkynyl is on other than the alpha carbon atom; or a mono- or di-salt form thereof in which the salt forming cation is a pharmaceutically acceptable cation.

4,281,132
PIPERIDINO UREAS AND THIOUREAS

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed Oct. 24, 1978, Ser. No. 954,147
Claims priority, application United Kingdom, Oct. 29, 1977, 45142/77
Int. Cl.³ C07D *211/58*
U.S. Cl. 546—224 1 Claim

1. Benzoyl-3-[1-(2-hydroxy-3-[2-methoxyphenoxy]propyl)-piperid-4-yl]urea.

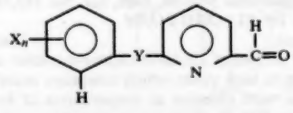
4,281,133
SUBSTITUTED PHENOXY AND PHENYLTHIO PICOLINALDEHYDES

Sudarshan K. Malhotra, Walnut Creek, and Michael J. Ricks, Martinez, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 17,752, Mar. 5, 1979, which is a continuation-in-part of Ser. No. 859,908, Dec. 12, 1977, Pat. No. 4,163,787, which is a continuation-in-part of Ser. No. 777,188, Mar. 14, 1977, abandoned. This application Nov. 29, 1979, Ser. No. 98,464
Int. Cl.³ C07D *213/48*
U.S. Cl. 546—298 10 Claims

1. A compound corresponding to the formula

(Formula I)



wherein X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl,

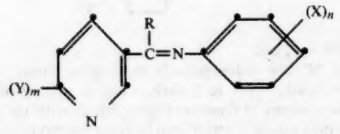
3,4-methylenedioxy, chloro, fluoro or bromo; n represents an integer of 0 to 2 and Y represents oxygen or sulfur.

4,281,134
DERIVATIVES OF CERTAIN PHENYLIMINOMETHYLPYRIDINES

Pieter Ten Haken, Eastling, Near Faversham; Shirley B. Webb, Sheldwich, Near Faversham, and Graham C. Smith, Sittingbourne, all of England, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 60,716, Jul. 26, 1979, abandoned. This application Jan. 14, 1980, Ser. No. 111,734
Claims priority, application United Kingdom, Aug. 8, 1978, 32523/78
Int. Cl.³ C07D *213/36*
U.S. Cl. 546—334 **3 Claims**

1. A phenyliminomethylpyridine of the formula:



(1) m is zero, n is zero and R is alkylthio of from one to five carbon atoms;

(2) m is zero, n is one or two, and R is alkyl, alkoxy or alkoxyalkoxy of from one to twenty carbon atoms; alkylthio of from one yo five carbon atoms; cycloalkyloxy of from three to six carbon atoms; cyano, optionally substituted phenylthio, triazolyl, (n-butyl)amino, di(n-butyl-)amino, 1-piperidinyl, di(n-propyl)amino, (n-nonyl)amino, di(3-methylpropyl)amino; 3,5-dimethyl-piperidin-1-yl; and X is alkyl of from one to four carbon atoms or halogen, with the provisos that

(a) when R is alkoxy and X is alkyl, n is one;

(b) when R is isopropoxy, X is halogen, and n is two, 3-chloro, 4-fluor is excluded;

(c) when R is alkoxy, n is two, one of X is halogen and the other is alkyl, 3-methyl, 4-bromo is excluded;

(d) when R is alkylthio; X is alkyl and n is one, 4-alkyl is excluded;

(3) R is isopropoxy, is isopropylthio, m is one, Y is chlorine, and $(X)_n$ is 4-chloro.

3. A phenyliminomethylpyridine according to claim 1 wherein m is zero, R is octyloxy and $(X)_n$ is 4-chloro.

4,281,135
PREPARATION OF HIGHLY CHLORINATED PYRIDINES

Donald J. Perettie, Midland, Mich., and Norman L. Dean, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 47,514, Jun. 11, 1979, abandoned. This application May 28, 1980, Ser. No. 153,793
Int. Cl.³ C07D *213/04*
U.S. Cl. 546—345 **6 Claims**

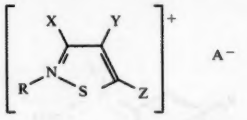
1. A process for preparing 2,3,5,6-tetrachloropyridine and pentachloropyridine in high yields which comprises reacting 2,6-dichloropyridine with chlorine at temperatures of from about 150° to about 300° C. in the presence of a catalytic amount of an aluminum, iron or silica oxide catalyst and under sufficient pressure to maintain the 2,6-dichloropyridine reactant as a liquid and recovering the desired product.

4,281,136
2-ALKYL-3-HALOISOTHIAZOLIUM SALTS AND THEIR DERIVATIVES

Joseph A. Virgilio; Milton Manowitz, both of Wayne, and Emanuel Heilweil, Fairfield, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Continuation-in-part of Ser. No. 854,456, Nov. 25, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 952,038
Int. Cl.³ C07D *275/02*; A61K *31/424*
U.S. Cl. 548—206 **44 Claims**

1. A salt of the formula:



wherein:

R is an alkyl or alkenyl up to 8 carbons;

X is chlorine or bromine;

Y is selected from the group consisting of hydrogen, methyl, ethyl, carbomethoxy, carboethoxy, chlorine, bromine, cyano and nitro;

Z is selected from the group consisting of methyl, ethyl, hydrogen, chlorine, bromine, cyano, carbomethoxy and carboethoxy; and

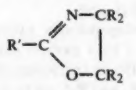
A^- is a suitable anion.

4,281,137
PURIFICATION OF 2-OXAZOLINES

James W. Sanner, and Peter W. Owen, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 20, 1980, Ser. No. 122,946
Int. Cl.³ C07D *263/12*
U.S. Cl. 548—239 **11 Claims**

1. A process for purifying a 2-oxazoline compound represented by the formula



wherein R′ is hydrogen, an aryl or aliphatic group having less than 8 carbon atoms and R at each occurrence is independently hydrogen or a methyl group, said 2-oxazoline containing residual water and other impurities, said process comprising the steps of:

(a) treating the 2-oxazoline with a dialkyl phosphite or a silane bearing at least one halogen substituent and a remaining number of hydrogen, phenyl or C_1 to C_4 alkyl substituents, so as to react with substantially all of the water present; and

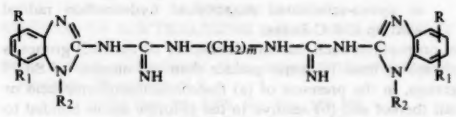
(b) distilling the treated 2-oxazoline to recover the purified oxazoline.

4,281,138
ANTIMICROBIAL BIS-BENZIMIDAZALE COMPOUNDS

Bola V. Shetty, Stamford, Conn., and John E. Airey, Mt. Kisco, N.Y., assignors to The Purdue Frederick Company, New York, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,279
Int. Cl.³ C07D *235/04*
U.S. Cl. 548—306 **12 Claims**

1. A compound of the formula:



wherein R and R_1=H, lower alkyl, halogen, methoxy, hydroxy, nitro, carboxy, phenyl, phenyl substituted by lower alkyl or sulfamyl, where R_2=H, lower alkyl, phenyl or phenyl substituted by lower alkyl and where n is an integer from 2–20.

4,281,139

ALKYLTHIOIMIDAZOLIDINETRIONES

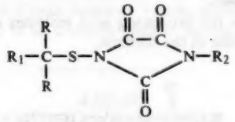
Otto W. Maender, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 948,118, Oct. 2, 1978, Pat. No. 4,207,216. This application Oct. 25, 1979, Ser. No. 88,317

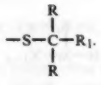
Int. Cl.³ C07D *233/96*

U.S. Cl. 548—307 **14 Claims**

1. A compound of the formula



in which each R independently is alkyl of 1–5 carbon atoms, R_1 is alkyl of 1–12 carbon atoms, R_2 is hydrogen, alkyl of 1–12 carbon atoms, aryl of 6–10 carbon atoms, aralkyl of 7–10 carbon atoms or



4,281,140

PROCESS FOR THE PREPARATION OF HYDANTOINS

Wilfried Zecher, and Rudolf Merten, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

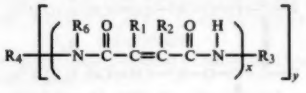
Division of Ser. No. 854,111, Nov. 23, 1977, Pat. No. 4,182,812. This application Jul. 26, 1979, Ser. No. 61,061

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714655

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—313 **4 Claims**

1. A process for the preparation of a hydantoin comprising reacting at a temperature of from 0° to 450° C. an organic monoisocyanate or monoisothiocyanate of the formula R_5-NCO or R_5-NCS with an unsaturated diamide of the formula:



wherein

R_1, R_2, R_3, R_4 and R_6 may be the same or different and each is selected from the group consisting of hydrogen, alkyl of 1–20 carbon atoms, aryl of 6–20 carbon atoms and aralkyl of 7–20 carbon atoms; R_3 and R_4 are also bivalent and trivalent organic moieties corresponding to the previously mentioned monovalent organic moieties; when x and y are both one, R_4 and R_6 are additionally together forming a heterocyclic having 3–7 carbon atoms wherein a nitrogen heteroatom is bonded to both R_4 and R_6; R_1 and R_2 are also halogen; R_5 is selected from the group consisting of unsubstituted or substituted alkyl of 1–20 carbon atoms, unsubstituted or substituted cycloalkyl of 5–12 carbon atoms, unsubstituted or substituted aryl of 6–12 carbon atoms, heterocyclic aryl of 4–12 carbon atoms wherein the hetero atom is N, O or S and heterocycloalkyl of 4–12 carbon atoms wherein the hetero atom is N, O or S, and the substituents are selected from the group consisting of halogen, alkyl of 1–6 carbon atoms and aryl of 6–16 carbon atoms; and

x and y each are integers from 1 to 3, with the proviso that at least one of x and y is 1.

4,281,141

3-(IMIDAZOL-4-YL)-2-PHENYLPROPANENITRILES

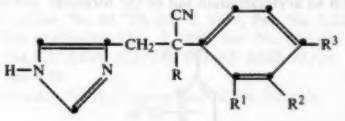
Leander Merritt, and Richard P. Pioch, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 30, 1980, Ser. No. 154,653

Int. Cl.³ C07D *401/06, 233/54*

U.S. Cl. 548—342 **11 Claims**

1. A compound of the formula



wherein

R is C_1–C_4 alkyl, 2-pyridyl, phenyl or phenyl mono (3- or 4-) substituted with methyl, bromo, chloro, fluoro or trifluoromethyl;

R^1 is hydrogen, chloro, bromo or fluoro;

R^2 is hydrogen, methyl, bromo, chloro, fluoro or trifluoromethyl;

R^3 is hydrogen, methyl, bromo, chloro, fluoro or trifluoromethyl;

provided that one or both of R^2 and R^3 is hydrogen; and that R^1 is an atom other than hydrogen only when R^3 is chloro, bromo or fluoro;

or a non-phytotoxic acid addition salt thereof.

4,281,142

IMIDAZOLECARBOXALDEHYDES

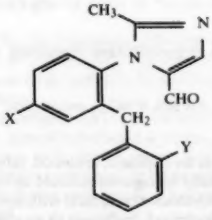
George F. Field, West Caldwell, and William J. Zally, Cresskill, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 25,219, Mar. 29, 1979, Pat. No. 4,194,049. This application Sep. 27, 1979, Ser. No. 79,288

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—343 **1 Claim**

1. A compound of the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl.

4,281,143

PROCESS FOR PREPARING 1-ARYL-3-AMINO-5-PYRAZOLONES

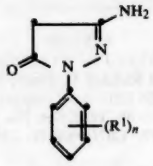
John A. Hyatt, Kingsport, Tenn.; Stephen E. French, Rochester, and Cataldo A. Maggiulli, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,548

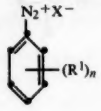
Int. Cl.³ C07D *231/52*

U.S. Cl. 548—360 **5 Claims**

1. The process for preparing a 1-aryl-3-amino-5-pyrazolone of the formula



comprising reacting a non-reactive ester of 3-nitropropionic acid with an aryldiazonium salt of the formula



to produce the intermediate α-nitrohydrazone, and then reducing said intermediate to give the corresponding aminopyrazolone, wherein each R^1 is independently selected from hydrogen; lower dialkylamino; and straight or branched lower alkyl, lower alkoxy, phenyl and cyclohexyl, each of which may be substituted with hydroxy, lower alkoxy, or lower dialkylamino; n is 1, 2 or 3; and X is an anion.

4,281,144

PREPARATION OF MULTI-BRANCHED SILICON-FUNCTIONAL POLYORGANO-SILOXANES

Armand de Montigny, Leverkusen, and Hans-Heinrich Moretto, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,101

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919559

Int. Cl.³ C07F *7/10, 7/18*

U.S. Cl. 556—416 **7 Claims**

1. In the preparation of multi-branched equilibrated mixed acyloxy-containing and chlorine-containing organopolysiloxanes by reacting a chlorosilane of the formula

$$R_aSiCl_{4-a}$$

wherein

a=0 or 1,

with at least one organosiloxane containing units of the formula

$$R_2R'SiO_{1/2},\ RR'SiO,\ R'SiO_{3/2} \text{ and/or } SiO_2$$

wherein

R is hydrogen or an aliphatic, aromatic, saturated or unsaturated, optionally halogen-substituted or cyano-substituted monovalent hydrocarbon radical with up to 8 C atoms and

R′ is chlorine, hydroxyl, hydrogen or an aliphatic, aromatic, saturated or unsaturated, optionally halogen-substituted or cyano-substituted monovalent hydrocarbon radical with up to 8 C atoms,

in proportions such that the number of all the SiCl groups is always at least 1.5 times greater than the number of SiOH groups, in the presence of (a) fluoroalkanesulphonic acid or salt thereof and (b) relative to the chlorine atoms bonded to silicon, at least 1.1 times the molar amount of a concentrated monobasic carboxylic acid, the improvement which comprises adding a portion of the carboxylic acid in a first stage, and in a second stage adding the balance of the carboxylic acid along with water in the amount required to achieve the desired degree of branching.

4,281,145

PROCESS FOR PRODUCING ALKOXYLATED SILANES

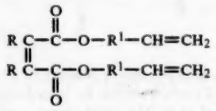
Tyrone D. Mitchell, Albany, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 2, 1980, Ser. No. 136,640

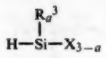
Int. Cl.³ C07F *7/18, 7/04*

U.S. Cl. 556—440 **63 Claims**

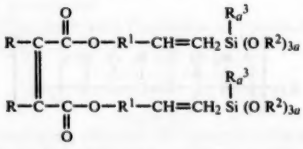
1. A process for producing silyl maleates comprising (a) reacting a maleate of the formula,



with



in the presence of a platinum catalyst and (b) reacting the intermediate product with an aliphatic alcohol of the formula R^2OH where said intermediate product is present in an organic solvent and where said aliphatic alcohol is added to said intermediate product slowly over a period of at least six hours wherein said intermediate product is maintained at the reflux temperature of said organic solvent during said addition wherein the aliphatic alcohol is added to said intermediate product below and into the liquid layer of said intermediate product in the reaction vessel and wherein the reaction is carried out at the reflux temperature of said organic solvent and wherein there is continually removed overhead an azeotrope of alcohol, solvent and water in which is dissolved HCl so as to keep the concentration of the HCl and unreacted alcohol in the reaction mixture to a minimum to produce in at least 70% yield a silyl maleate of the formula,



where R^2 and R^3 are monovalent hydrocarbon radicals of 1 to 8 carbon atoms, R is selected from hydrogen and monovalent hydrocarbon radicals of 1 to 8 carbon atoms, a varies from 1 to 2, X is halogen, and R^1 is a divalent hydrocarbon radical of 0 to 8 carbon atoms.

4,281,146
METHOD OF NEUTRALIZING A HALOGEN SILICONE COMPOUND

Bruce A. Ashby, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,248
Int. Cl.³ C07F 7/04, 7/08, 7/20
U.S. Cl. 556—456 **14 Claims**

1. A method of neutralizing a halogen silicone compound comprising adding to the halogen silicone compound from 1 to 5 moles per mole of the halogen silicone compound selected from the class consisting of halo silanes and siloxanes of a formate of the formula,

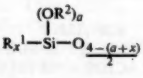
where R is selected from the class consisting of halogen and alkyl radicals of 1 to 3 carbon atoms and R^1, R^2, R^3 may be the same or different and is an alkyl radical of 1 to 8 carbon atoms and from 0.05 to 1 mole based on 1 mole of said halogen silicone compound of an aliphatic alcohol having 1 to 6 carbon atoms.

4,281,147
PROCESS FOR THE PRODUCTION OF AQUEOUS SOLUTIONS OF ALKALI ORGANOSILICONATES

Götz Koerner; Vaclav Kropac, and Harald Rau, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,389
Claims priority, application United Kingdom, Mar. 5, 1979, 7664/79
Int. Cl.³ C07F 7/04, 7/08
U.S. Cl. 556—459 **8 Claims**

1. In a process for the preparation of aqueous solutions of alkali organosiliconates which comprises reacting an organoalkoxypolysiloxane having the formula



wherein
R^1 is an alkyl residue with 1 to 3 carbon atoms, a vinyl residue and/or a phenyl residue,
R^2 is an alkyl residue with 1 to 4 carbon atoms,
a is a number ≧2, and
x is 1 to 1.25,
with an aqueous solution of sodium hydroxide or potassium hydroxide having a concentration of 0.7 to 0.9 mole/100 g at temperatures ≧80° C.

4,281,148
METHOD FOR THE PREPARATION OF A TRIORGANOSILYLATED 2,3-UNSATURATED ALCOHOL

Ryoji Noyori, Aichi, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,212
Claims priority, application Japan, Sep. 18, 1979, 54-119814
Int. Cl.³ C07F 7/18
U.S. Cl. 556—470 **4 Claims**

1. A method for the preparation of a triorganosilylated 2,3-unsaturated alcohol which comprises reacting an oxirane compound having at least 3 carbon atoms in a molecule, of which the carbon atom adjacent to the oxirane ring has at least one hydrogen atom directly bonded thereto, with a triorganosilyl trifluoromethanesulfonate in the presence of an amine compound.

4,281,149
PROCESS FOR TREATING SILICON PARTICLES WITHIN A SILICONE REACTOR SYSTEM

Ray W. Shade, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,718
Int. Cl.³ C07F 7/16, 7/08
U.S. Cl. 556—472 **29 Claims**

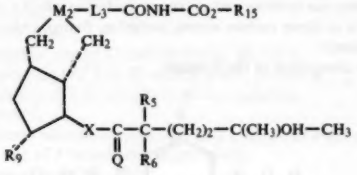
1. A process for treating the particles in a silicone reactor where an organic chloride where the organic is a monovalent hydrocarbon radical is reacted with particles of silicon in the presence of copper comprising (a) removing particles selected from silicon particles and particles of silicon and copper from said reactor of less than 40 microns average diameter particle size; (b) abraiding said particles to remove the surface coating of said particles; and (c) returning said particles to the reactor.

4,281,150
19-HYDROXY-19-METHYL-6A-CARBA-PGI$_2$ SULFONYLAMIDES

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

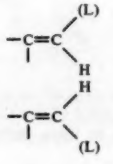
Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507.
This application Mar. 3, 1980, Ser. No. 126,466
Int. Cl.³ C07C 103/737, 143/82; A61K 31/18
U.S. Cl. 560—10 **1 Claim**

1. A prostacyclin-type compound of the formula



I.

wherein L_3 is
(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,
(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4, or (3) $-CH_2-CH=CH-$;
wherein M_2 is



(1)

(2)

wherein Q is oxo, α-H:β-H, α-OH:βR$_4$, or α-R$_4$:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;
wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive; wherein R_9 is hydrogen or hydroxyl; and wherein X is
(1) trans-CH=CH—,
(2) cis-CH=CH—,

(3) —C≡C—, or
(4) —CH_2CH_2—.

4,281,151
PHENYLENE DIOXAMATE ESTERS

Charles M. Hall, and John B. Wright, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

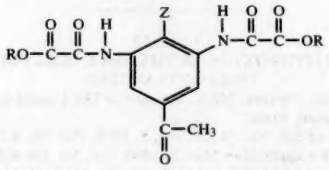
Continuation of Ser. No. 714,572, Aug. 16, 1976, Pat. No. 4,095,028, which is a division of Ser. No. 382,762, Jul. 26, 1973, Pat. No. 3,993,679, which is a continuation-in-part of Ser. No. 317,005, Dec. 20, 1972, abandoned. This application Jun. 2, 1978, Ser. No. 912,136

The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.

Int. Cl.[3] **C07C** *103/60*

U.S. Cl. 560—44 **2 Claims**

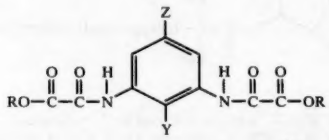
1. A compound of the formula



wherein R is selected from the group consisting of alkyl of from one to six carbon atoms, inclusive;

Z is selected from the group consisting of hydrogen, alkyl of from one to three carbon atoms, inclusive, alkoxy of from one to three carbon atoms, inclusive, fluoro, chloro, and bromo.

2. A compound of the formula



wherein R is alkyl of one to six carbon atoms, inclusive; Z is trifluoromethyl, nitro, or

wherein D is hydrogen or alkyl of one to three carbon atoms, inclusive; Y is hydrogen, alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, fluoro or chloro.

4,281,152
ACRYLATE MONOMERS AND PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING SAME

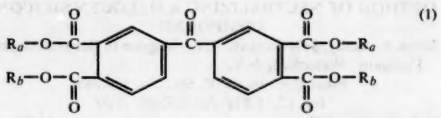
Thomas F. Huemmer, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 20, 1980, Ser. No. 161,638

Int. Cl.[3] **C07C** *69/767*

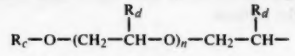
U.S. Cl. 560—52 **4 Claims**

1. A copolymerizable acrylate monomer useful as a component of U.V. curable resin compositions and anaerobic adhesive compositions with the structure:

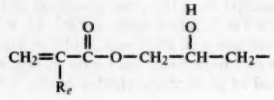


(1)

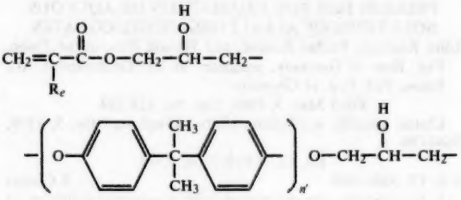
where R_a is an alkyl group containing up to about 18 carbon atoms or an alkoxy ether moiety having the structure:



where R_c is an alkyl group containing up to about 18 carbon atoms, R_d is hydrogen or a methyl group, and n is zero or a small integer, and R_b has the structure:



or



where R_e is hydrogen or an alkyl group and n′ is a small integer.

4,281,153
15-DEOXY-16-HYDROXY-16-SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

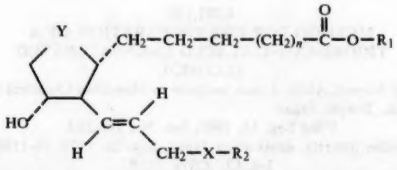
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Garnerville, N.Y., and Sow-Mei Lai Chen, Park Ridge, N.J., assignors to American Cyanamid, Stamford, Conn.

Division of Ser. No. 821,022, Aug. 1, 1977, Pat. No. 4,202,989, which is a division of Ser. No. 706,343, Jul. 13, 1976, Pat. No. 4,061,670. This application Jan. 17, 1980, Ser. No. 112,773

Int. Cl.[3] **C07C** *177/00*

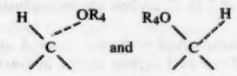
U.S. Cl. 560—118 **24 Claims**

1. An optically active compound of the formula:

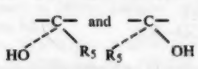


or a racemic mixture of that formula and the mirror image thereof wherein R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms, R_2 is selected from the group consisting of alkyl having from 2 to 7 carbon atoms optionally substituted with one or two alkyl

groups each having up to 3 carbon atoms; Y is a divalent moiety selected from the group consisting of:



wherein R_4 is selected from the group consisting of hydrogen and alkanoyloxy having from 2 to 6 carbon atoms; X is a divalent moiety selected from the group consisting of:



wherein R_5 is selected from the group consisting of vinyl and cyclopropyl; n is an integer from 3 to 5, inclusive; and the pharmacologically acceptable cationic salts thereof when R_1 is hydrogen.

4,281,154

9-DEOXY-9-METHYLENE-11-DEOXY-19-OXO-PGF$_2$ COMPOUNDS

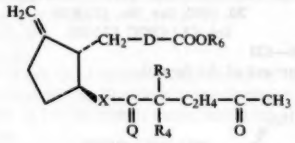
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,046

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,

(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(3) cis—CH_2—CH=CH—CH_2—CH_2—, or

(4) trans—$(CH_2)_3$—CH=CH—;

wherein g is zero, one, two, or three;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH_3,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH_3,

(k) —(p—Ph)—NH—CO—NH_2,

(l) —(p—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is cis- or trans—CH=CH—.

4,281,155

11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGF$_2$ COMPOUNDS

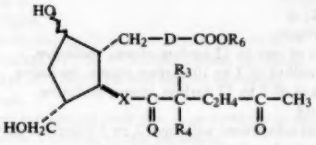
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,047

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,

(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(3) cis—CH_2—CH=CH—CH_2—CH_2—, or

(4) trans—$(CH_2)_3$—CH=CH—;

wherein g is zero, one, two, or three;

wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one of 3 carbon atoms, inclusive,

(g) -(p—Ph)—CO—CH_3,

(h) -(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,

(i) -(p—Ph)—NH—CO—(p—Ph),

(j) -(p—Ph)—NH—CO—CH_3,

(k) -(p—Ph)—NH—CO—NH_2,

(l) -(—Ph)—CH=N—NH—CO—NH_2,

(m) β-naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is cis-or trans—CH=CH—.

4,281,156

11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGE$_2$ COMPOUNDS

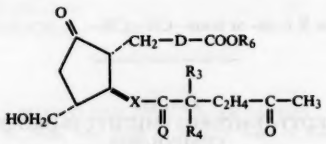
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,048

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



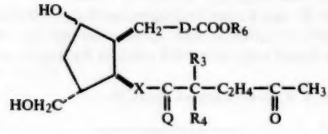
wherein D is
(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis-CH_2—CH=CH—CH_2—CH_2—, or
(4) trans-$CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hyrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

4,281,157
11-DEOXY-11-HYDROXYMETHYL-INTER-OXA-19-OXO-PGF_1 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,069
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



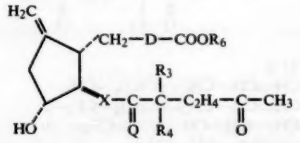
wherein
D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_3$—O—CF_2—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein
Q is α—OH:β—R_5 or α—R_5:β—OH,
wherein
R_5 is hydrogen or methyl;
wherein
R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH —CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein
(p—Ph) is para-phenyl or inter-para-phenylene,
wherein
R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein
R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein
X is cis- or trans—CH=CH—.

4,281,158
9-DEOXY-9-METHYLENE-INTER-OXA-19-OXO-PGF_1 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,070
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula

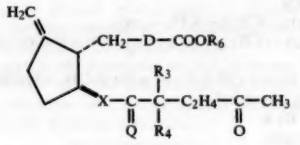


wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_3$—O—CF_2—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

4,281,159
9-DEOXY-9-METHYLENE-11-DEOXY-19-OXO-PGF$_1$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,211
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

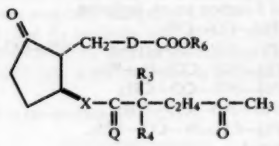
1. A compound of the formula



wherein D is
(1) $(CH_2)_3—(CH_2)_g—CH_2—$, or
(2) $(CH_2)_3—(CH_2)_g—CF_2—$;
wherein g is zero, one, two, or three;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—,O—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

4,281,160
11-DEOXY-19-OXO-PGE$_1$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,212
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

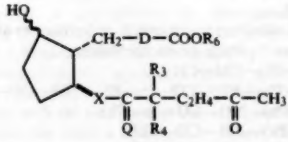
1. A compound of the formula



wherein D is
(1) $(CH_2)_3—(CH_2)_g—CH_2—$, or
(2) $(CH_2)_3—(CH_2)_g—CF_2—$;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28}, wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

4,281,161
11-DEOXY-19-OXO-PGF$_1$ COMPOUNDS
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,213
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3—(CH_2)_g—CH_2—$, or
(2) $(CH_2)_3—(CH_2)_g—CF_2—$;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis— or trans—CH=CH—.

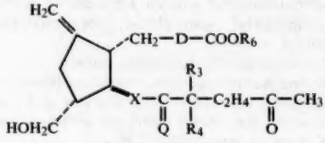
4,281,162

9-DEOXY-9-METHYLENE-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,214
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(2) $(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

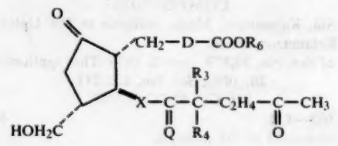
4,281,163

11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 132,215
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(2) $(CH_2)_3$—$(CH_2)_g$—CF_2—; wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-pH)—CO—CH_3,
(h) —(p-pH)—NH—CO—(p-pH)—NH—CO—CH_3,
(i) —(p-pH)—NH—CO—(p-pH),
(j) —(p-pH)—NH—CO—CH_3,
(k) —(p-pH)—NH—CO—NH_2,
(l) —(p-pH)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28}, wherein (p-pH) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

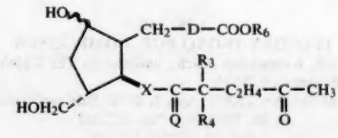
4,281,164

11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,216
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—$(CH_2)_g$—CH_2—, or

(2) $(CH_2)_3$—$(CH_2)_g$—CH_2—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:βOH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive;
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

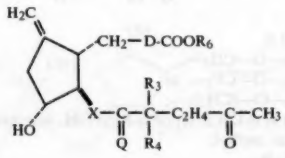
4,281,165

9-DEOXY-9-METHYLENE-19-OXO-PGF$_2$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,219
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—, or
(4) trans—$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two or three;
wherein Q is αOH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—PH)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—pH),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis-or trans-CH=CH—.

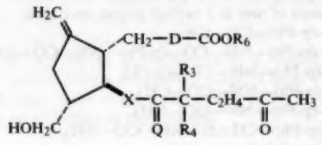
4,281,166

9-DEOXY-9-METHYLENE-11-DEOXY-11-HYDROXYMETHYL-INTER-OXA-19-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,228
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_3$—O—CF_2—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; 'wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans—CH=CH—.

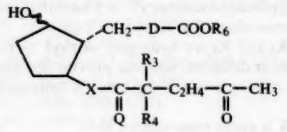
4,281,167

11-DEOXY-INTER-OXA-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,229
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_3$—O—CF_2—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

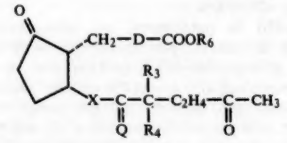
4,281,168

11-DEOXY-INTER-OXA-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo. Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,233
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_3$—O—CF_2—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

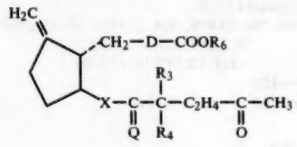
4,281,169

9-DEOXY-9-METHYLENE-11-DEOXY-INTER-OXA-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,234
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—O—CH_2—,
(2) $(CH_2)_3$—O—CF_2—, or
(3) —CH_2—O—$(CH_2)_3$—;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is cis- or trans-CH=CH—.

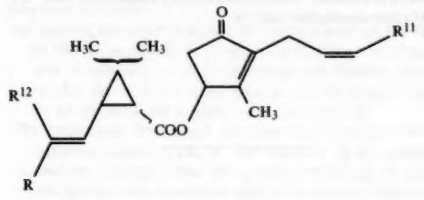
4,281,170

PROCESS FOR THE PREPARATION OF PYRETHRINS AND ANALOGUES THEREOF AND INSECTICIDAL COMPOSITIONS CONTAINING THE SAME

István Székely, Szentendre, and Marianna Lovász née Gáspár; Budapest, Gábor Kovacs, Rudolf Soós, both of Budapest, Lajos Nagy, Szentendre; Bela Kószegi, Budapest, all of Hungary, assignors to Chinoin Gyógyszer és Vegyészti Termékek Gyára Rt, Budapest, Hungary

Filed Feb. 21, 1979, Ser. No. 13,070
Claims priority, application Hungary, Feb. 23, 1978, CI 1814
Int. Cl.[3] C07C *69/747, 67/297, 69/743*
U.S. Cl. 560—124 10 Claims

1. A process for the preparation of an optically active or racemic compound of the formula I



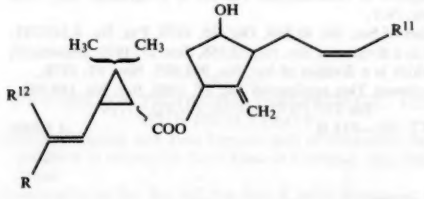
(I)

wherein

R^{11} is straight or branched chain lower alkyl or 1-alkenyl or hydrogen;

R and R^{12} are the same or different and are hydrogen, halogen or lower alkyl or one of the moieties R and R^{12} is lower alkoxy-carbonyl;

the ~ valency bonds represent α- and/or β-configuration; and the — bonds represent β-configuration, which comprises treating an optically active or racemic compound of the formula II



(II)

with an oxidizing agent in an aprotic inert organic solvent wherein the oxidizing agent is capable of oxidizing the secondary hydroxy group of the compound of the formula II without damaging other parts of the compound.

4,281,171

LIQUID CARBON DIOXIDE EXTRACTION OF PYRETHRINS

Marc Sims, 5835 Colton Blvd., Oakland, Calif. 94611

Filed Jul. 26, 1979, Ser. No. 60,886
Int. Cl.[3] C07C *67/48*
U.S. Cl. 560—124 4 Claims

1. A process for removing pyrethrins from a pyrethrin containing material comprising the steps of:

(i) contacting said pyrethrin containing material with liquid carbon dioxide; and

(ii) separating said liquid carbon dioxide containing extracted pyrethrins from said material.

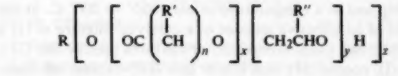
4,281,172

ACRYLYL ESTERS OF POLYESTER-POLYETHER COPOLYMERS

Robert J. Knopf, Saint Albans, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 21, 1980, Ser. No. 132,652
Int. Cl.[3] C07C *69/675*
U.S. Cl. 560—185 21 Claims

1. A polyester-polyether copolymer of the formula:



wherein

R is the organic residue of a mono-, di-, tri- or tetra-hydroxyl alcohol having from 1 to 20 carbon atoms;

R′ is hydrogen or alkyl having from 1 to 6 carbon atoms, with the proviso that at least n+2 of the R′ groups in the —OC(CR′H)$_n$O— moiety are hydrogen atoms;

R″ is hydrogen, methyl or ethyl;

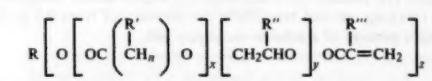
n is an integer having a value of from 4 to 7;

x is an integer having an average value of from 2 to 250;

y is an integer having an average value of from 1 to 100;

z has a value equal to the valence of R and is from 1 to 4.

11. An acrylyl ester of the formula:



wherein

R is the organic residue of a mono-, di- tri- or tetrahydroxyl alcohol having from 1 to 20 carbon atoms;

R′ is hydrogen or alkyl having from 1 to 6 carbon atoms, with the proviso that at least n+2 of the R′ groups in the —OC(CR′H)$_n$O— moiety are hydrogen atoms;

R″ is hydrogen, methyl or ethyl;

R‴ is hydrogen, methyl or cyano;

n is an integer having a value of from 4 to 7;

x is an integer having an average value of from 2 to 250;

y is an integer having an average value of from 1 to 100;

z has a value equal to the valence of R and is from 1 to 4.

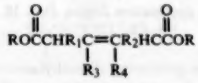
4,281,173

PREPARATION OF UNSATURATED DIESTERS BY CATALYTIC OXIDATIVE CARBONYLATION OF DIOLEFINS

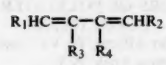
Haven S. Kesling, Jr., Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 3, 1979, Ser. No. 99,377
Int. Cl.[3] C07C *67/38*
U.S. Cl. 560—204 10 Claims

1. In the process for preparing an unsaturated diester having the formula



wherein R is alkyl having 1 to 8 carbon atoms or aralkyl having 6 carbon atoms in the ring and 1 to 4 carbon atoms in the alkyl moiety and R_1, R_2, R_3 and R_4 are the same or different and are each hydrogen, halogen, alkyl having 1 to 4 carbon atoms or aryl having 6 carbon atoms in the ring by reacting a diolefin having the formula



wherein R_1, R_2, R_3, and R_4 are as aforesaid, with a mixture of carbon monoxide and oxygen and a stoichiometric amount of a dehydrating agent selected from the group consisting of acetals, ketals, carboxylic ortho esters, trialkylorthoborates and dialkoxycycloalkanes, at a pressure of from about 15 psig to 5,000 psig and at a temperature of about 25° to 200° C. in the presence of an effective amount of a catalytic mixture of (1) a platinum group metal compound or mixtures thereof and (2) a copper (I), copper (II), iron (II) or iron (III) oxidant salt compound and recovering the desired unsaturated diester, the improvement comprising carrying out said reaction in the presence of from 0.3 to 3 weight percent of a vanadium salt which is soluble in the reaction mixture under reaction conditions.

8. In the process of preparing dimethylhex-3-endioate by reacting 1,3-butadiene with a mixture of carbon monoxide and oxygen and a stoichiometric quantity of a dehydrating agent selected from the group consisting of acetals, ketals, carboxylic ortho esters, trialkylorthoborates and dialkoxycycloalkanes, at a pressure of between about 500 psig and 1800 psig and at a temperature of from about 80° to 150° C. in the presence of an effective amount of a palladium metal salt compound and a copper (II) oxidant salt compound, the improvement comprising carrying out said reaction in the presence of from 0.3 to 3 weight percent of a soluble vanadium salt.

4,281,174

OXIDATIVE CARBONYLATION OF ALCOHOLS TO PRODUCE DIALKYL OXALATES

Steven P. Current, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 21, 1980, Ser. No. 141,840

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—204 **15 Claims**

1. A process for preparing dialkyl oxalates by the oxidative carbonylation reaction which comprises contacting a normally liquid monohydric saturated aliphatic or alicyclic alcohol containing from 1 to 20 carbon atoms with a mixture of carbon monoxide and oxygen in the presence of a catalytic amount of a mixture comprising (1) palladium in complex combination with a neutral or negatively charged ligand, (2) a quinone, and (3) a redox agent comprising a compound of cobalt, manganese, copper, iron or vanadium, said contacting being conducted at a reaction temperature in the range of about 50° C.–100° C. and a carbon monoxide partial pressure in about the range 500 psi to 1500 psi.

4,281,175

PROCESS FOR PRODUCING DIMETHYLAMINOETHYL METHACRYLATE

Yoshiya Kametani, and Yasuo Iino, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 802,901, Jun. 2, 1977, abandoned. This application Jun. 17, 1980, Ser. No. 160,367

Claims priority, application Japan, Jun. 18, 1976, 51-71009

Int. Cl.³ C07C *67/02*

U.S. Cl. 560—217 **9 Claims**

1. A process for producing dimethylaminoethyl methacrylate which comprises transesterifying methyl methacrylate with dimethylaminoethanol with a catalyst selected from the group consisting of tetrabutyltin, trioctyltin ethoxide, dibutyltin dimethoxide, dibutyltin diethoxide, dibutyltin dihydride, dibutyltin dilaurate, dioctyltin dilaurate, dibutyltin maleate, dioctyltin maleate bis(tributyltin) oxide, bis (dibutylmethoxytin) oxide and bis (dioctylmethoxytin) oxide.

4,281,176

PREPARATION OF ETHYL CARBOXYLATES

Max Gruffaz, La Mulatiere, and Odile Micaelli, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jan. 16, 1979, Ser. No. 3,814

Claims priority, application France, Jan. 16, 1978, 78 01570; Nov. 22, 1978, 78 33770

Int. Cl.³ C07C *67/04*; C11C *3/00*

U.S. Cl. 560—247 **19 Claims**

1. In a process for the preparation of an ethyl carboxylate, in the liquid phase, from ethylene under pressure and at least one carboxylic acid, in the presence of an effective amount of acid catalyst, the improvement which comprises conducting the reaction in an essentially anhydrous medium comprising at least one solvent selected from the group consisting of nitrobenzene, dimethylsulfone, tetramethylenesulfone, dichloro-tetramethylenesulfone, 3-methyltetramethylenesulfone and 2,4-dimethyltetramethylenesulfone.

4,281,177

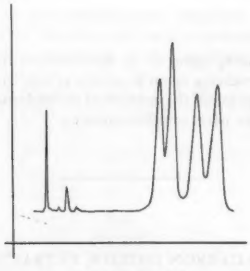
6-HYDROXY-2,6-DIMETHYLHEPTANAL, ORGANOLEPTIC USES THEREOF AND PROCESSES FOR PREPARING THE SAME

Mark A. Sprecker, Sea Bright; Robert W. Trenkle; Braja D. Mookherjee, both of Bricktown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

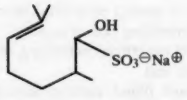
Division of Ser. No. 88,519, Oct. 26, 1979, Pat. No. 4,242,281, which is a division of Ser. No. 52,355, Jun. 27, 1979, abandoned, which is a division of Ser. No. 961,685, Nov. 17, 1978, abandoned. This application Jul. 17, 1980, Ser. No. 169,899

Int. Cl.³ C07C *143/16, 141/00, 47/19*

U.S. Cl. 260—513 R **1 Claim**



1. The sulfite-aldehyde addition salt of 2,6-dimethyl-5-heptenal having the structure:



4,281,178

PROCESS FOR THE PRODUCTION OF BENZOIC ACID FROM PROCESS RESIDUES THAT CONTAIN BENZYL BENZOATE

Henri Sidi, Paramus, and William G. Hughes, Plainfield, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 99,696, Dec. 3, 1979, abandoned. This application Apr. 18, 1980, Ser. No. 141,713
Int. Cl.³ C07C *51/16, 51/255*
U.S. Cl. 562—412 10 Claims

1. In the process for the production of benzoic acid by the liquid phase oxidation of toluene with an oxygen-containing gas in the presence of a heavy metal oxidation catalyst wherein benzoic acid and benzaledehyde are separated from a process residue that comprises benzoic acid, benzyl banzoate, reaction by-products having boiling points higher than the boiling point of benzaldehyde, and spent catalyst, the improvement that comprises the steps of

(a) heating the process residue to a temperature in the range of 180° C. to 250° C. at a pressure in the range of 50 to 200 torr to separate a benzyl benzoate-rich fraction from a residue that contains spent catalyst and the higher-boiling by-products of the toluene-oxidation reaction;

(b) contacting the benzyl benzoate-rich fraction with an oxygen-containing gas in the presence of an oxidation catalyst selected from the group consisting of cobalt, manganese, and vanadium salts of monocarboxylic acids having 1 to 12 carbon atoms at a temperature in the range of 130° C. to 200° C. at a pressure in the range of 1 atmosphere to 10 atmospheres until 25% to 60% of the benzyl benzoate has been oxidized to benzoic acid and an oxidation product mixture that comprises benzoic acid and benzyl benzoate has been formed; and

(c) recovering benzoic acid from the oxidation product mixture.

4,281,179

PROCESS FOR PRODUCING TEREPHTHALIC ACID WITH HIGH PURITY

Makoto Komatsu, and Toru Tanaka, both of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 967,091, Dec. 6, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,969
Claims priority, application Japan, Dec. 7, 1977, 52-146935
Int. Cl.³ C07C *51/16*
U.S. Cl. 562—416 15 Claims

1. A process for producing terephthalic acid with a high purity, where terephthalic acid is produced by oxidizing p-tolualdehyde with molecular oxygen in the presence of a heavy metal catalyst and a bromine compound in water as a solvent, characterized by conducting the oxidation at 180°-280° C., using manganese and/or cerium as the heavy metal catalyst, maintaining the bromine concentration in the reaction system during the reaction in a range of 0.5-12% by weight on the basis of the reaction solution in terms of bromine ions, and maintaining the amount of mineral acid in the reaction system during the reaction at a ratio of g-equivalents of hydrogen ions of the mineral acid to sum total of g-equivalents of the hydrogen ions and manganese and/or cerium ions ($H^+/H^+ + 2Mn^{++}$ or $H^+/H^+ + 3Ce^{+++}$) of 1–85%, and at a ratio of sum total of g-equivalents of the hydrogen ions and manganese and/or cerium ions to g-equivalents of bromine ions ($H^+ + 2Mn^{++}/Br^-$ or $H^+ + 3Ce^{+++}/Br^-$) of 0.5–5.

4,281,180

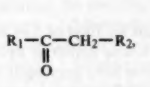
PROCESS FOR PRODUCING THREO-3-AMINO-2-HYDROXYBUTANOYL-AMINOACETIC ACIDS, AS WELL AS NOVEL INTERMEDIATED THEREFOR AND PROCESS FOR PRODUCING THEM

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tadashi Shirai, Musashino; Rinzo Nishizawa; Masao Suzuki, both of Tokyo, and Tetsushi Saino, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 96,693
Claims priority, application Japan, Nov. 25, 1978, 53/145509; Dec. 13, 1978, 58/153157
Int. Cl.³ C07C *51/347*
U.S. Cl. 562—448 7 Claims

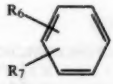
1. A process for producing a threo-3-amino-2-hydroxybutanoyl aminoacetic acid comprising the steps of;

(A) reacting an N-protected 2-oxoethylamine represented by the formula:

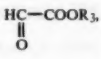


(I)

wherein R_1 represents a naphthyl or a group of the formula:

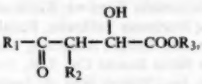


in which R_6 and R_7 represent individually hydrogen, halogen, amino or a protected amino, hydroxy or a protected hydroxy, a lower alkoxy or a lower alkyl and R_2 represents a protected amino; with glyoxylic acid or its ester represented by the formula:



(II)

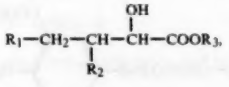
wherein R_3 represents hydrogen, lower alkyl having 1 to 6 carbon atoms or benzyl, in a solvent at a temperature from 0° C. to the boiling point of the solvent in the presence of a base, to produce a threo-3-protected amino-2-hydroxy-4-oxobutanoic acid or its ester represented by the formula:



(III)

wherein R_1, R_2 and R_3 have the same meanings as above;

(B) then reducing the compound of formula (III) in a solvent at a temperature from 0° C. to 150° C. a threo-3-protected amino-3-hydroxybutanoic acid or its ester represented by the formula:

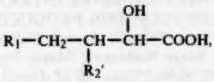


(IV)

wherein R_1, R_2 and R_3 have the same meanings as above;

(C) further subjecting the compound of formula (IV), as required, to the steps of (a) eliminating the lower alkyl or benzyl of R_3, (b) optical resolution and/or (c) eliminating the amino protecting group, thereby converting the com-

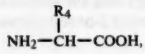
pound of formula (IV) into a threo-3-amino-2-hydroxybutanoic acid represented by the formula:



(V)

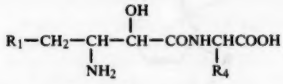
wherein R_1 has the same meanings as above and R_2' represents amino or a protected amino; and then

(D) condensing the compound of formula (V), in a conventional manner for forming a peptide coupling, with an aminoacetic acid represented by the formula:



(VI)

wherein R_4 represents an alkyl of 3 or 4 carbon atoms or 3-guanidinopropyl, whose amino or hydroxyl groups not relevant to the reaction have previously been protected as required, and then eliminating the protecting groups for the amino or hydroxyl groups to produce the threo-3-amino-2-hydroxybutanoylaminoacetic acid represented by the formula:



(VII)

wherein R_1 and R_4 have the same meanings as above.

4,281,181

NOVEL L-γ-GLUTAMYL-3-CARBOXY-4-HYDROXYANILIDE AND SALTS THEREOF

Takeshi Nagasawa; Katsumasa Kuroiwa; Katsuyuki Takabayashi, all of Koriyama; Norimasa Takizawa, Funabashi; Kazuyo Hagihara, Ichikawa, and Tadami Akatsuka, Tsuchiura, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima and Iatron Laboratories, Inc., Tokyo, both of, Japan

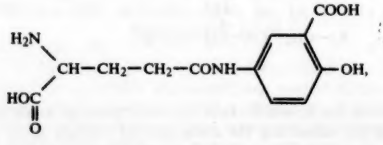
Filed Nov. 14, 1979, Ser. No. 94,072

Claims priority, application Japan, Nov. 16, 1978, 53-141463

Int. Cl.³ C07C *101/72*

U.S. Cl. 562—453 **1 Claim**

1. L-γ-glutamyl-3-carboxy-4-hydroxyanilide represented by the formula



(I)

an acid addition salt thereof, or an alkali metal or amine salt thereof.

4,281,182

NOVEL LACTONES OF CIS 2,2-DIMETHYL-CYCLOPROPANE-1-CARBOXYLIC ACID AND THEIR USE

Jacques Martel, Bondy; Jean Tessier, Vincennes; Jean-Pierre Demoute, Montreuil-sous-Bois, and Jean Jolly, Fontenay-sous-Bois, all of France, assignors to Roussel UCLAF, Paris, France

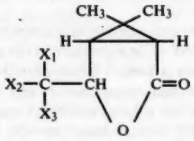
Division of Ser. No. 914,399, Jun. 12, 1978, Pat. No. 4,166,063. This application Apr. 6, 1979, Ser. No. 27,654

Claims priority, application France, Jun. 27, 1977, 77 19612

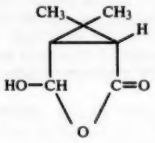
Int. Cl.³ C07C *61/40*; C07D *307/93*

U.S. Cl. 562—506 **5 Claims**

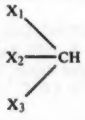
1. A process for the preparation of a cis compound of the formula



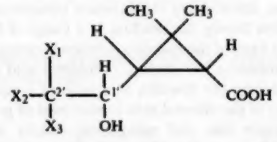
wherein X_1, X_2 and X_3 when identical are selected from the group consisting of chlorine and bromine and when at least two are different, are selected from the group consisting of fluorine, chlorine and bromine comprising reacting in the presence of a basic agent selected from the group consisting of alkali metal alkanolates, alkali metal hydrides and alkali metal hydroxides a compound of the formula



with a haloform of the formula



wherein X_1, X_2 and X_3 have the above definition to obtain a compound of the formula



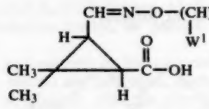
and reacting the latter with an acid agent or a dehydrating agent or subjecting the latter to heat to obtain the desired compound.

4,281,183
OXYIMINO-SUBSTITUTED CYCLOPROPANECARBOXYLATE

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 51,668, Jun. 25, 1979, Pat. No. 4,237,123.
This application Jun. 5, 1980, Ser. No. 156,894
Int. Cl.³ C07C *61/04, 131/02*
U.S. Cl. 562—506 6 Claims

1. A cyclopropane compound having the formula



wherein W is $-OR^1$, $-SR^1$, $-S(O)R^1$, $-S(O)_2R^1$, $-NR^1R^2$, $-N(O)R^1R^2$ or $-(OCH_2CH_2)_q-OR^1$ in which q is an integer of 1 to 4, R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing from 1 to 8 carbon atoms optionally substituted by one or more halogen atoms, a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms, a cycloalkyl group containing from 3 to 7 ring carbon atoms, an alkenyl group containing from 3 to 4 carbon atoms optionally substituted by one or more halogen atoms or an alkynyl group containing from 3 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms or when p is 2 then W^1 is a hydrogen atom.

4,281,184
MONOCHLOROACETIC ACID PROCESS

Placido Spaziante, Lugano, Switzerland; Giancarlo Sioli, Cernobbio, and Luigi Giuffre, Milan, both of Italy, assignors to Fondazione deNora, Milan, Italy

Filed Mar. 22, 1978, Ser. No. 888,954
Claims priority, application Italy, Feb. 16, 1978, 20313 A/78
Int. Cl.³ C07C *51/363*
U.S. Cl. 562—603 5 Claims

1. A method of producing monochloroacetic acid which comprises:

(a) chlorinating at a temperature of at least 75° C. a mixture of acetyl chloride and acetic acid to produce a gaseous fraction comprising hydrogen chloride gas and a liquid fraction comprising monochloroacetic acid and acetic acid and separating the hydrogen chloride gas from the liquid, (b) separately contacting resulting hydrogen chloride from Step (a) with a solution of acetic acid and acetic anhydride at a temperature not above 60° C. to form a liquid mixture of acetic acid and acetyl chloride and a second gaseous hydrogen chloride gas containing acetyl chloride, (c) contacting at least part of the second gaseous hydrogen chloride with the liquid from Step (a) to strip acetyl chloride from the liquid and produce a third gaseous hydrogen chloride fraction containing acetyl chloride, (d) scrubbing said third gaseous fraction with liquid acetic acid and feeding the resulting acetic acid-acetyl chloride solution to Step (a).

4,281,185
SYMMETRICAL DIPHOSPHATETRAAZACYCLOOCTATETRAENES

Kazimiera J. L. Paciorek, Corona Del Mar; Reinhold H. Kratzer, Irvine; Thomas I. Ito, Fountain Valley, and James H. Nakahara, Irvine, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 26, 1980, Ser. No. 163,134
Int. Cl.³ C07F *9/22*; C10M *1/44*
U.S. Cl. 564—13 8 Claims

1. A process for synthesizing symmetrical diphosphatetraazacyclooctatetraenes which comprises the steps of (1) forming a reaction mixture composed of (a) a diaryltrihalophosphorane and (b) a perfluorinated amidine; (2) heating said reaction mixture in the presence of an acid acceptor for a period of time and at a temperature sufficient to effect a reaction therebetween; and (3) separating the resulting reaction product.

7. The compound 1,5-bis(diphenylphospha)-3,7-bis[$C_3F_7OCF(CF_3)$]-2,4,6,8-tetraazacyclooctatetraene.

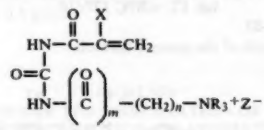
8. The compound 1,5-bis(diphenylphospha)-3,7-bis[$C_3F_7OCF(CF_3)CF_2OCF(CF_3)$]-2,4,6,8-tetraazacyclooctatetraene.

4,281,186
ACRYLYL AND METHACRYLYL UREAS CONTAINING QUATERNARY GROUPS, PROCESS FOR THEIR PREPARATION AND THEIR USE IN THE PREPARATION OF POLYMERS

Erich Küster, Krefeld; Kurt Dahmen, Monchen-Gladbach, and Eduard Barthell, Krefeld, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen & Cie, Krefeld, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,989
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856384
Int. Cl.³ C07C *127/22*
U.S. Cl. 564—46 9 Claims

1. A urea of the formula



wherein

X is hydrogen or a methyl group,

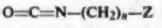
R is a lower alkyl radical having from 1 to 4 carbon atoms,

m is 0 or 1,

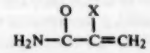
n is an integer between 1 and 4, and

Z is a salt-forming anion.

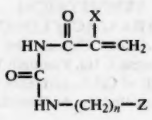
4. A process for the preparation of a urea according to claim 1, wherein Z is halogen and m is 0, comprising reacting a haloalkyl or haloacyl isocyanate of the formula



with an α,β-unsaturated carboxylic acid amide of the formula



to produce a halogen-substituted urea of the formula



and reacting the halogen-substituted urea in a solvent with a trialkylamine of the formula NR_3 at a temperature from about 20° to 100° C. and at a pressure from about 1 to 4 bars.

4,281,187

PROCESS FOR THE PREPARATION OF 2,4-DINITROPHENYL UREA

Theodor Papenfuhs, Frankfurt am Main, and Kurt Gengnagel, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,561

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855882

Int. Cl.³ C07C *126/04*

U.S. Cl. 564—50 **5 Claims**

1. In a process for the preparation of 2,4-dinitrophenyl urea comprising a reaction of 2,4-dinitro-1-chlorobenzene with cyanamide and subsequent acid hydrolysis of the 2,4-dinitrophenyl cyanamide, the improvement consisting of conducting the reaction of the 2,4-dinitro-1-chlorobenzene with the cyanamide and the subsequent acid hydrolysis in an aqueous medium without intermediate isolation of the 2,4-dinitrophenyl cyanamide.

4,281,188

N'[3-(HALOBENZOYL)-4-(GLYCYLAMINO)PHENYL-]UREAS

Albert E. Fischli, and Andre Szente, both of Riehen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

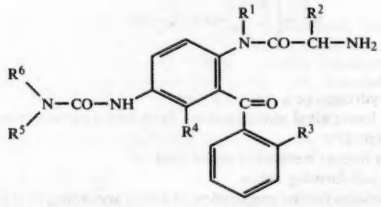
Division of Ser. No. 63,288, Aug. 2, 1979. This application Sep. 11, 1980, Ser. No. 186,051

Claims priority, application Switzerland, Aug. 11, 1978, 8563/78; Jun. 6, 1979, 5270/79; Jul. 5, 1979, 6296/79

Int. Cl.³ C07C *127/19*

U.S. Cl. 564—51 **2 Claims**

1. Compounds of the general formula



IV

wherein R^1 represents a lower alkyl group, R^2 represents a hydrogen atom or a lower alkyl group, R^3 represents a halogen atom and R^4 represents a hydrogen or halogen atom and either R^5 represents a hydrogen atom or a lower alkyl group and R^6 represents a lower alkyl, lower hydroxyalkyl or lower acyloxyalkyl group or R^5 represents a hydrogen atom and R^6 represents an aryl or lower aralkyl group or R^5 and R^6 together with the nitrogen atom to which they are attached represent a 3-membered to 7-membered heterocycle which, when it is at least 5-membered, can contain as a ring member an oxygen or sulphur atom or a group of the formula $>N-R^7$ in which R^7 represents a hydrogen atom or a lower alkyl group.

4,281,189

SULFONAMIDE INTERMEDIATES FOR ADRENERGIC BLOCKING AGENTS

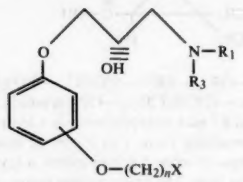
Kenneth E. Fahrenholtz, Bloomfield; Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Jefferson W. Tilley, North Caldwell, all of N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 73,051, Sep. 6, 1979, Pat. No. 4,247,710, which is a division of Ser. No. 875,966, Feb. 8, 1978, Pat. No. 4,202,978. This application Aug. 22, 1980, Ser. No. 180,259

Int. Cl.³ C07C *143/75, 143/79*

U.S. Cl. 564—92 **2 Claims**

1. The compound of the formula



wherein R_1 is lower alkyl, R_3 is selected from the group consisting of mesyl, tosyl, brosyl and benzenesulfonyl, X is halo and n is 2 to 20.

4,281,190

PROCESS FOR PREPARING N-[2-(P-HYDROXYPHENYL)-ETHYL]-P-CHLOROBENZAMIDE

Nicholas Harris, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Aug. 14, 1980, Ser. No. 177,906

Int. Cl.³ C07C *103/78*

U.S. Cl. 564—185 **1 Claim**

1. The method of preparing N-[2-(p-hydroxyphenyl)ethyl]-p-chlorobenzamide which consists in: (a) reacting N-(p-chlorobenzoyl)glycine and p-hydroxybenzaldehyde in the presence of sodium acetate and acetic anhydride to form 4-(p-acetoxybenzylidene)-2-(p-chlorophenyl)-5-oxazolone; (b) treating said oxazolone with sodium hydroxide to form 2-(p-chlorobenzamido)-3-(p-hydroxyphenyl)acrylic acid; (c) decarboxylating said acrylic acid to form 1-(p-chlorobenzamido)-2-(p-(hydroxyphenyl)ethylene; and (d) hydrogenating said ethylene.

4,281,191

19-HYDROXY-19-METHYL-PG AMIDES

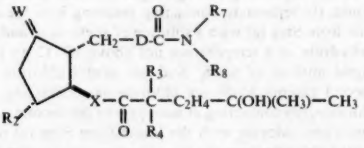
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,203

Int. Cl.³ C07C *103/19;* **A61K** *31/16*

U.S. Cl. 564—189 **178 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,

(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(3) cis—CH_2—CH=CH—CH_2—CH_2—,

(4) trans—$(CH_2)_3$—CH=CH—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(6) —$(CH_2)_3$—CH_2—CF_2—,
(7) —$(CH_2)_3$—O—CH_2—,
(8) —$(CH_2)_2$—O—$(CH_2)_2$,
(9) —CH_2—O—$(CH_2)_3$—,
(10) —(m—Ph)—$(CH_2)_2$—, or
(11) —(m—Ph)—O—CH_2—,
wherein —(m—Ph)— is inter-meta-phenylene, and
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5: β-OH, wherein R_5 is hydrogen or methyl;
wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;
wherein R_2 is, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and
wherein X is cis- or trans—CH=CH—, —C≡C—, or —CH_2CH_2—.

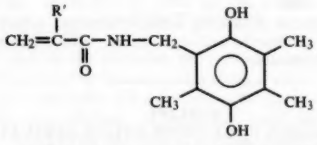
4,281,192

N-(2,5-DIHYDROXY-3,4,6-TRIMETHYL-BENZYL)-ACRYLAMIDE AND-METHACRYLAMIDE

Bernard Jacquet, Antony; Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 16, 1979, Ser. No. 85,399
Claims priority, application France, Oct. 26, 1978, 78 30461
Int. Cl.³ C07C *103/60*
U.S. Cl. 564—207 **3 Claims**

1. A compound of the following formula:



(I)

in which: R' represents a hydrogen atom or a methyl radical.

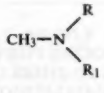
4,281,193

PROCESS FOR PREPARING SUBSTITUTED FORMAMIDES

Harold E. Bellis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 16, 1980, Ser. No. 169,530
Int. Cl.³ C07C *102/00*
U.S. Cl. 564—215 **7 Claims**

1. A process for the catalytic preparation of a substituted formamide, the process comprising
(A) bringing together, in an inert liquid medium, under conditions suitable for reaction,
(1) a compound represented by the structure



where
R and R_1 are alkyl radicals of 1–8 carbon atoms, aryl radicals of 6–10 carbon atoms, aralkyl radicals of 7–10 carbon atoms or alkaryl radicals of 7–10 carbon atoms, and R_1 can in addition be an alkyl radical containing a —$N(CH_3)R_2$ group in which R_2 can be hydrogen, an alkyl radical of 1–8 carbon atoms, an aryl radical of 6–10 carbon atoms, an aralkyl radical of 7–10 carbon atoms or an alkaryl radical of 7–10 carbon atoms, with the provisos that R and R_1 can be joined together to form an alkylene or azaalkylene group of 3–8 carbon atoms, and when
R is alkyl or aralkyl, R_1 can be hydrogen;
(2) oxygen; and
(3) a catalytically effective amount of a combination of
(a) a soluble chloride, bromide or iodide of copper, cobalt, gold, iron, mercury, nickel, palladium, platinum, silver or zinc, and
(b) a chloride, bromide or iodide of sodium, potassium, lithium or ammonium, and then
(B) recovering the substituted formamide product from the reaction mass.

4,281,194

PROCESS FOR AMMOXIMATION OF CYCLOHEXANONE

John N. Armor, Morris Plains, and Emery J. Carlson, Chatham, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 28, 1980, Ser. No. 125,723
Int. Cl.³ C07C *131/04*
U.S. Cl. 564—267 **5 Claims**

1. In a process of direct conversion to oxime of a mixture of cyclohexanone, ammonia and oxygen in contact with a solid catalyst at temperature in the range of 50° to 500° C., the improvement which comprises employing as catalyst a silica/alumina amorphous gel, obtained by forming a nearly clear liquid solution consisting essentially of an orthosilicate tetraester and an aluminate triester in mole ratio of about 2:1–3:1 of said silicate:said aluminate; hydrolyzing said esters, thereby coprecipitating silica and alumina in the form of a gel, by adding to the ester solution, under agitation, a quantity of water amounting to about 0.4 to 5 moles of water per molecular equivalent of total ester groups, at a rate of addition which equals or exceeds the rate at which gelation of the liquid commences, whereafter rapid gelation of the body of liquid to a body of gel occurs with evolution of heat; and evaporating out of the gel at temperatures not over about 275° C. the by-products of hydrolysis thereby producing dried gel of bulk density about 0.3 to 0.4 g/cc.

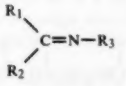
4,281,195

PROCESS FOR THE PREPARATION OF SCHIFF'S BASES BY THE REACTION OF AROMATIC AMINES WITH KETONES

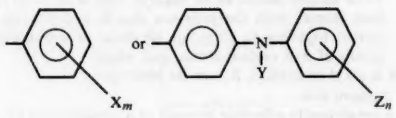
Joachim George, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 10, 1980, Ser. No. 110,806
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901863
Int. Cl.³ C07C *119/06*
U.S. Cl. 564—271 **6 Claims**

1. A process for preparing a Schiff's base of the formula



wherein R_1 when taken separately is alkyl having 1 to 3 carbon atoms, R_2 when taken separately is alkyl having 2 to 9 carbon atoms, R_1 and R_2 when taken together with the carbon atom to which they are attached form a saturated hydrocarbon ring having from 5 to 7 carbon atoms and R_3 is



wherein
X is alkyl having 1 to 3 carbon atoms,
m is 1 to 3,
Y is hydrogen or phenyl,
Z is alkyl having 1–3 carbon atoms or amino and
n is 1 to 3, said process comprising reacting an amine of the formula $H_2N—R_3$ wherein R_3 is aforesaid with a ketone of the formula

wherein R_1 and R_2 are as aforesaid in a molar ratio of amine to ketone of from 1:1 to 1:10 and in the presence of a catalytic amount of at least one catalyst selected from the group consisting of calcium hydrogen phosphate, apatite, aluminum oxide and aluminum hydroxide and removing water of reaction by azeotropic distillation.

4,281,196

QUATERNARY AMMONIUM COMPOUNDS, THEIR PREPARATION, AND THEIR USE AS SOFTENING AGENTS

Horst Rutzen, Langenfeld; Jochen Heidrich, Düsseldorf; Martin Bischoff, Gelsenkirchen; Udo Kloubert, Erkrath; Peter Waltenberger, Hilden, and Ingo Wegener, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

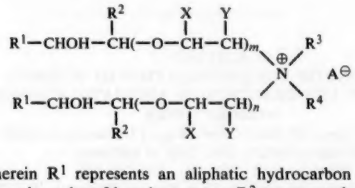
Filed Oct. 11, 1979, Ser. No. 83,850

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844451; Oct. 12, 1978, 2844463

Int. Cl.³ C07C *91/26*

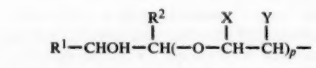
U.S. Cl. 564—292 **13 Claims**

1. A quaternary ammonium compound of formula



(I)

wherein R^1 represents an aliphatic hydrocarbon radical of from about 1 to 21 carbon atoms; R^2 represents hydrogen or has the same meaning as R^1, the total number of carbon atoms in R^1 and R^2 being from 6 to 22, and, when R^2 is hydrogen, R^1 has from 6 to 21 carbon atoms; R^3 represents an alkyl or hydroxyalkyl group having from 1 to 4 carbon atoms or a radical of formula



(Ia)

wherein R^1 and R^2 are as defined above, X and Y are each hydrogen or a methyl group, with the proviso that X and Y cannot be a methyl group, and p is an integer of from 1 to 20; R^4 represents an alkyl radical of from 1 to 4 carbon atoms; m and n are integers of from about 1 to 20; and $A^\ominus$ is an anion.

4,281,197

HYDROLYTIC DECOMPOSITION METHOD

Fred G. Oblinger, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 49,511, Jun. 18, 1979, abandoned, which is a continuation of Ser. No. 826,915, Aug. 22, 1977, abandoned. This application Oct. 6, 1980, Ser. No. 194,164

Int. Cl.³ C07C *85/26*; C08J *11/00*

U.S. Cl. 564—393 **13 Claims**

1. In a process for hydrolytically decomposing porous polyurethane solids disposed in a chamber and separating liquid polyol therefrom the improvement comprising:
(A) evacuating said chamber to a pressure below about 10^{-1} atmospheres;
(B) preheating the walls of said chamber and thereafter admitting saturated steam into said chamber to provide at least about 30 atmospheres of pressure therein;
(C) maintaining a temperature in said chamber sufficient to continue hydrolytic decomposition and to promote separation of gaseous diamine and liquid polyol in said chamber;
(D) exhausting gaseous effluent from the upper portion of said chamber;
(E) cooling said chamber; and
(F) collecting liquid polyol from the lower portion of said chamber.

4,281,198

PROCESS FOR PRODUCING METHYLHYDRAZINES

Shiro Hojo, Sakaide; Yoichi Hasegawa, Marukame; Tuyoshi Ichimiya, Takamatsu, and Kazuo Kimura, Sakaide, all of Japan, assignors to Japan Hydrazine Co., Inc., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 167,352

Claims priority, application Japan, Jul. 17, 1979, 54/90842

Int. Cl.³ C07C *109/02*

U.S. Cl. 564—464 **6 Claims**

1. A process for producing methylhydrazines, which comprises reacting trimethylanilinium halide with hydrazine or monomethylhydrazine.

4,281,199

POLYALKYLENE POLYAMINE ETHER DERIVATIVES OF POLYOXYALKYLENE COMPOUNDS

William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 866,205, Jun. 3, 1978, abandoned. This application Sep. 24, 1979, Ser. No. 78,544

Int. Cl.³ C08G *59/14, 65/32*

U.S. Cl. 564—475 **9 Claims**

1. A process for the preparation of a polyamine comprising:
(a) reacting propylene oxide, a butylene oxide or mixtures thereof with a hydroxyl compound having from one to eight hydroxyl groups,
(b) reacting the oxyalkylated hydroxyl compound of (a) with an epihalohydrin,
(c) reacting the product of (b) with a molar excess of amine, and
wherein there is substantially no dioxane formation when reacting the epihalohydrin with the oxyalkylated hydroxyl compound.

4,281,200

CATALYTIC PROCESS FOR CONVERTING OXAZOLIDINONES TO THEIR CORRESPONDING AMINOALCOHOLS

Karel A. J. Snoble, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1979, Ser. No. 71,208

Int. Cl.³ C07C *91/04, 51/56*

U.S. Cl. 564—487 **11 Claims**

1. A method for catalytically converting an oxazolidinone to its respective alkanolamine precursor by driving carbon diox-

ide from the oxazolidinone, comprising contacting said oxazolidinone with a small but catalytic amount of an inorganic base in aqueous solution and heating the reactants at a temperature of about 105° to about 200° C.

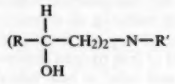
4,281,201

TERTIARY AMINES FOR USE IN WATER BASE HAIR CARE COMPOSITIONS

Phillip G. Abend, Los Angeles, Calif., assignor to Quad Chemical Corporation, Long Beach, Calif.

Filed Dec. 10, 1979, Ser. No. 101,775
Int. Cl.³ C07C *91/06, 91/10*
U.S. Cl. 564—506 **3 Claims**

1. A tertiary amine having the formula:



wherein R is a linear C_8 to C_{20} alkyl group, and R′ is a hydroxyalkyl or polyhydroxyalkyl group having from 1 to 10 carbon atoms and having from one to five hydroxy groups per R′.

4,281,202

PREPARATION OF MERCAPTO-ALCOHOLS

Bernard Buchholz; Charles B. Welsh, both of Blue Bell, and Henry C. Miller, Hatfield, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 29, 1980, Ser. No. 144,897
Int. Cl.³ C07C *149/18*
U.S. Cl. 568—62 **12 Claims**

1. A process for preparing mercapto-alcohols which comprises reacting a molar excess of hydrogen sulfide at sufficient pressure to maintain said hydrogen sulfide as a liquid with an alkylene, cycloalkylene, or aralkylene oxide having up to 8 carbon atoms in the presence of a zeolite catalyst in the alkali metal form and selected from the group consisting of Type X, Type Y, Type L and mixtures thereof.

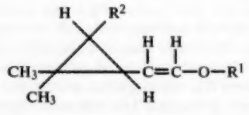
4,281,203

(CYCLOPROPYL)VINYL ALKYL ETHER DERIVATIVES

Johannes L. M. Syrier, and Johannes Van Berkel, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 28, 1980, Ser. No. 153,996
Claims priority, application United Kingdom, Jun. 1, 1979, 19266/79
Int. Cl.³ C07C *49/21, 43/162*
U.S. Cl. 568—303 **4 Claims**

1. A compound of the formula (I)



(I)

wherein R^1 represents an alkyl group with fewer than six carbon atoms and R^2 a 2-oxopropyl group or a 2,2-dihalovinyl group and the compound has the 1R,cis form in which 1 denotes the underlined carbon atom in the group H—C—C(H)=C in formula I.

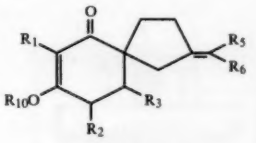
4,281,204

SUBSTITUTED SPIROCYCLIC DERIVATIVES

Brian J. Willis, Bergenfield, N.J., and Robert G. Eilerman, Merrick, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

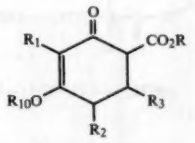
Filed Oct. 5, 1979, Ser. No. 82,066
Int. Cl.³ C07C *45/61, 49/427*
U.S. Cl. 568—361 **6 Claims**

1. A process for preparing a spiroketone having the structure:

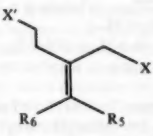


wherein each of R_1, R_2, R_3, R_5, and R_6 may be hydrogen or lower alkyl, and wherein R_{10} is lower alkyl which comprises:

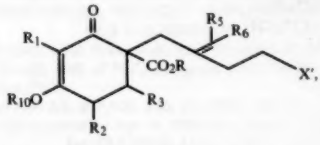
(a) reacting a substituted cyclohexanone carboxylate having the structure:



wherein R may be methyl or ethyl, with an alkylidene 1,4-dihalobutane having the structure:



wherein each of X and X′ may be chloro, bromo, or iodo, in the presence of a base such as an alkali metal hydride to form a carboxylate compound having the structure:



said reaction being carried out in a suitable solvent and at a suitable temperature in the range from about 0° to about 150° C. and said base being present in an amount equal to about one equivalent; and

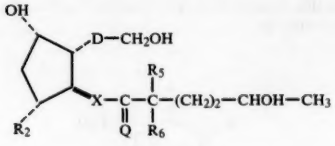
(b) decarboxylatively alkylating the compound formed in the presence of an alkali metal salt in a polar aprotic solvent to produce said spiroketone, said decarboxylative alkylation being carried out at a temperature in the range from about 80° to about 160° C. and the mole ratio of said carboxylate compound to said alkali metal salt being in the range from about 1:0.5 to 1:10.

4,281,205
2-DECARBOXY-2-HYDROXYMETHYL-19-HYDROXY-6-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508.
This application Mar. 3, 1980, Ser. No. 126,485
Int. Cl.^{3} C07C *49/534, 49/297*
U.S. Cl. 568—380 9 Claims

1. A prostacyclin-type compound of the formula



wherein D is $-(CH_2)_2-CO-CH_2-L_2-$ or $-CH_2-CO-CH_2-L_3-$

wherein L_2 is

(1) $-(CH_2)_j$, wherein j is one to 4, inclusive,

(2) $-(CH_2)_q-CF_2-$, wherein q is one, 2, or 3, or

(3) $-CH=CH-$,

wherein L_3 is

(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,

(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4, or

(3) $-CH_2-CH=CH-$;

wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,

wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;

wherein X is

(1) trans-CH=CH—,

(2) cis-CH=CH—,

(3) $-C\equiv C-$, or

(4) $-CH_2CH_2-$.

4,281,206
METHOD OF CONDUCTING REACTIONS IN A TRICKLE-TYPE REACTOR

Günter Brandes, Hamburg; Johannes Wöllner, Kapellen; Wilhelm Neier, and Werner Webers, both of Orsoy, all of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jan. 30, 1975, Ser. No. 545,641
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1974, 2404329
The portion of the term of this patent subsequent to Dec. 12, 1997, has been disclaimed.
Int. Cl.^{3} C07C *45/45, 29/04*
U.S. Cl. 568—396 10 Claims

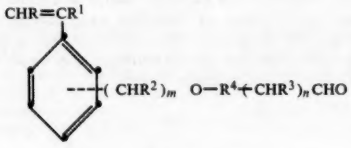
1. In a process for carrying out reactions between gaseous and liquid reactants which, during an onstream period, pass downwardly through a reaction zone containing a fixed bed of particulate catalyst having an average particle size not greater than about 2.0 mm, the improvement which comprises treating the catalyst prior to initiating an onstream period said treatment comprising removing air from said reaction zone by passing a gas devoid of free oxygen downwardly through said reaction zone and said catalyst bed, interrupting the flow of said gas and introducing a liquid to flow upwardly through said catalyst bed and cover same and then removing said liquid from said reaction zone and substantially simultaneously introducing said gaseous and liquid reactants into said reaction zone to flow downwardly through said catalyst bed thereby initiating the onstream period.

4,281,207
ALDEHYDE-CONTAINING VINYLARYL ETHERS

John C. Wilson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 928,138, Jul. 26, 1978, Pat. No. 4,225,689.
This application Oct. 26, 1979, Ser. No. 88,705
Int. Cl.^{3} C07C *47/232, 47/548*
U.S. Cl. 568—433 11 Claims

1. A compound having the formula (I):



wherein:

R, R^1, R^2 and R^3 are independently hydrogen or alkyl containing from 1 to 4 carbon atoms;

R^4 is arylene containing 6 to 18 carbon atoms;

m is an integer from 1 to 4; and

n is an integer from 0 to 4.

4,281,208
PHOTOVOLTAIC DEVICE AND METHOD OF MANUFACTURING THEREOF

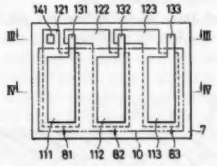
Yukinori Kuwano, Takatsuki; Terutoyo Imai, Hirakata, and Masakazu Umetani, Nagoya, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 29, 1980, Ser. No. 116,402

Claims priority, application Japan, Feb. 9, 1979, 54-14497; Feb. 9, 1979, 54-14498; Mar. 9, 1979, 54-27801; Mar. 12, 1979, 54-28922; Mar. 12, 1979, 54-28923; Mar. 16, 1979, 54-31305; Mar. 16, 1979, 54-31306

Int. Cl.³ H01L *31/06, 31/18*

U.S. Cl. 136—249 **75 Claims**



1. A photovoltaic device including a plurality of photoelectric converting regions, comprising:

a substrate of insulating material,

a unitary and continuous amorphous silicon layer formed on said insulating substrate and forming a plurality of spaced photoelectric converting regions,

a pair of electrodes provided in each said photoelectric converting region, the respective electrodes of each pair opposing each other with said unitary amorphous silicon layer therebetween, at least one electrode of each said pair of electrodes being of a radiation transmissive material,

each electrode of a said pair of electrodes of a photoelectric converting region having an extension extending outward of said amorphous silicon layer, and

means for electrically connecting corresponding ones of said extensions of said respective electrodes of said plurality of photoelectric converting regions in series for withdrawing photoelectromotive force of said plurality of photoelectric converting regions in electrical series fashion.

4,281,209
GAS-INSULATED ELECTRICAL APPARATUS WITH DIELECTRIC PARTICLE TRAPPING BARRIERS

Akiyoshi Yoshioka, Itami; Yoshikazu Shibuya, A, and Ioichiro Nakanishi, Osaka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 114,005

Claims priority, application Japan, Jan. 25, 1979, 54-8074

Int. Cl.³ H01B *9/04;* **H02G** *5/06*

U.S. Cl. 174—14 R **7 Claims**

1. A gas insulated electrical apparatus comprising a high voltage electric conductor, a grounded metallic housing in the form of a hollow cylinder connected to ground and filled with an amount of an electrically insulating gas high in dielectric strength, a plurality of disc-shaped electrically insulating spacers disposed at predetermined intervals in said metallic housing and supporting said high voltage electric conductor, and at least one separate dielectric member disposed adjacent to and spaced-apart from each of said electrically insulating spacers each dielectric member having a cross section in the form of a hollow truncated cone having larger and smaller diameter ends with the larger diameter end contacting the inner surface of said metallic housing, each dielectric member extending radially inwardly toward and spaced apart from said electric conductor and axially outwardly away from its adjacent insulating spacer.

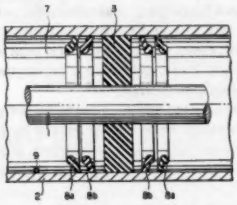
5. Vertically disposed gas-insulated electrical apparatus, comprising:

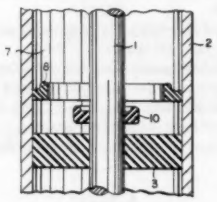
a vertically disposed high voltage electric conductor;

a vertically disposed grounded cylindrical metallic housing filled with an insulating gas high in dielectric strength;

a disc-shaped electrically insulating spacer disposed in said metallic housing and supporting said high voltage electric conductor in said housing;

a separate first dielectric member disposed on said conductor vertically higher than said insulating spacer, said first dielectric member being disposed adjacent to and spaced apart from said insulating spacer, said first dielectric member extending radially outwardly toward, and spaced apart from, said housing; and





a hollow separate second dielectric member having an inner and outer diameter disposed adjacent to, and spaced apart from, said insulating spacer and said first dielectric member, said second dielectric member being disposed vertically higher than said insulating spacer with said second dielectric member outer diameter contacting said housing, said second dielectric member having an axial width at said outer diameter less than the axial width of said second dielectric member at said inner diameter, said second dielectric member being spaced apart from said conductor.

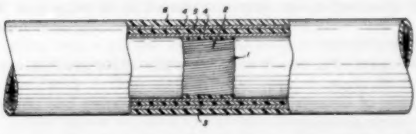
4,281,210
ELECTRICAL DEVICES CONTAINING A GREASE COMPATIBLE, MINERAL OIL EXTENDED POLYURETHANE

Melvin Brauer, East Brunswick, and Thaddeus F. Kroplinski, Bound Brook, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Division of Ser. No. 877,905, Feb. 15, 1978, Pat. No. 4,168,258. This application Apr. 6, 1979, Ser. No. 27,820

Int. Cl.³ H01B *3/30, 7/28*

U.S. Cl. 174—23 C **13 Claims**



1. An insulated electrical device containing a plurality of insulated wire conductors, said device having interior spaces

between the insulated wire conductors which contain a grease compatible, cured, cross-linked, mineral oil extended polyurethane which is non-spewing, comprising:

(a) from about 8 to about 45 parts, by weight, of polyurethane, said polyurethane being prepared by reacting

(i) a polyisocyanate compound or a polyisocyanate prepolymer prepared by the reaction of a polyisocyanate compound with a polyol selected from the group consisting of castor oil, polyether polyols, hydroxyl bearing homopolymers of dienes, hydroxyl bearing copolymers of dienes, and combinations thereof, wherein at least about 0.25 equivalents of the polyisocyanate compound per 1.0 equivalents of the polyisocyanate compound used is a liquid long chain aliphatic polyisocyanate, with

(ii) a polyol selected from the group consisting of castor oil, polyether polyols, hydroxyl bearing homopolymers of dienes, hydroxyl bearing copolymers of dienes, and combinations thereof,

(b) from about 20 to about 75 parts, by weight, of mineral oil, said mineral oil being characterized by having from about 1.0 to about 30% aromatic carbon atoms, based on the total number of carbon atoms present in the mineral oil, and

(c) from about 10 to about 47 parts, by weight, of coupling agent, said coupling agent being characterized by

(i) being miscible in all proportions with said mineral oil,

(ii) having a total solubility parameter from about 7.0 to about 9.5,

(iii) having a hydrogen bonding index number from about 6.0 to about 12.0, and

(iv) being substantially non-reactive with said polyisocyanate prepolymer and said polyol, and

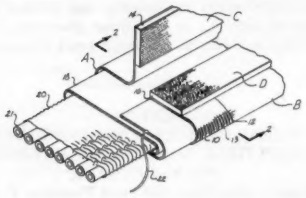
wherein the grease compatible, cured, cross-linked, mineral oil extended polyurethane is further characterized by the presence of a polydiene moiety in the polyurethane structure.

4,281,211

WOVEN COVER FOR ELECTRICAL TRANSMISSION CABLE

Odes D. Tatum, and Edgar A. Ross, both of Greenville, S.C., assignors to Southern Weaving Company, Greenville, S.C.

Filed Apr. 13, 1979, Ser. No. 29,887
Int. Cl.³ H01B *11/06*
U.S. Cl. 174—36 **9 Claims**



1. A flexible woven jacket assembly encasing a woven electrical transmission cable or cables of generally flat configuration providing protection against abrasion and for maintaining conductors of stacked cables generally fixed in their relative positions while affording a flexible package comprising:

at least one of said transmission cables;

an elongated cover strip constructed from warp and fill strands woven together to form a generally solid outer cover fabric;

said cover strip woven to define a pair of longitudinal marginal edges;

a strip of fastener hook tape carried adjacent one of said marginal edges;

a strip of fastener loop tape carried adjacent said other marginal edges;

said fastener tapes securing said marginal edges of said woven cover strip wrapped about the transmission cable; and

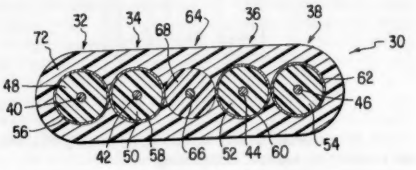
said woven cover strip and fastener tapes having a sufficient width to afford adjustability to enable the jacket circumference of said cover strip to vary and said marginal edges be joined to accommodate a variety of sizes and numbers of said transmission cables such as when in a stacked configuration.

4,281,212

CABLE ASSEMBLY HAVING SHIELDED CONDUCTOR

Stephen B. Bogese, II, Roanoke, Va., assignor to Virginia Patent Development Corp., Roanoke, Va.

Filed Jun. 14, 1979, Ser. No. 48,523
Int. Cl.³ H01B *7/08*
U.S. Cl. 174—36 **6 Claims**



1. Apparatus, which comprises:

a first shielded wire assembly which includes:

(a) a conductive wire adapted to transmit an electrical signal;

(b) cylindrical insulation covering said wire along its length;

(c) means for shielding said wire against outside electrical interference which comprises a thin metallic layer of conductive material bonded to said insulation; and

(d) a ground wire covered by a cylindrical semi-conductive material which is in contact with said thin layer of conductive material along its length;

a second shielded wire assembly substantially identical to said first shielded wire assembly;

an insulating jacket covering said semi-conductive material and said first and second shielded wire assemblies to form a substantially planar multi-conductor cable array;

the outer diameters of said semi-conductive material and said thin metallic layer of conductive material of said first and second shielded wire assemblies being approximately the same;

means for electrically isolating said conductive material of said second shielded wire assembly from said conductive material of said first shielded wire assembly, said electrically isolating means comprising an additional conductive wire covered by an unshielded insulation and positioned between said first and second shielded wire assemblies.

4,281,213

INSULATING SUPPORT STRUCTURE FOR AN ELECTRIC BUS CONDUCTOR

Philip Sciscione, Philadelphia, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 20, 1980, Ser. No. 131,740
Int. Cl.³ H02G *5/02;* **H01B** *17/18*
U.S. Cl. 174—68 B **6 Claims**

4. In electric bus equipment:

(a) a post-type insulator having spaced-apart proximate and distal ends,

(b) a first bus-conductor supporting member of generally U-shaped form fixed to the distal end of said insulator and comprising a pair of spaced-apart legs and a flange at the free end of one of said legs projecting generally radially-outwardly from said one leg,

(c) a second bus-conductor supporting member of generally

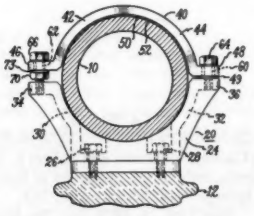
U-shaped form comprising spaced legs and a flange at the free end of one of said legs projecting generally radially-outwardly from said one leg,

(d) said supporting members having generally semi-cylindrical surfaces which together define a generally cylindrical internal surface when said flanges are placed in juxtaposition,

(e) a bus conductor having a generally cylindrical external surface substantially surrounded by said generally cylindrical internal surface,

(f) means for securing together said supporting members comprising means fastening the flange of said second support member to the juxtaposed flange of the first support member,

(g) the fastening means between said juxtaposed flanges being adjustable to position the flange of said second supporting member in either of two fixed positions relative to the juxtaposed flange of said first supporting member, one of said positions being a slip-joint position spaced by a relatively large distance from the juxtaposed flange of said first member thereby providing sufficient clearance between said internal and external cylindrical surfaces to



permit said bus conductor to slide longitudinally relative to said supporting members, the other of said positions being a fixed-joint position sufficiently close to the juxtaposed flange of said first member that said internal cylindrical surface tightly embraces said external cylindrical surface,

(h) said fastening means of (g) comprising a threaded member extending between said juxtaposed flanges and threaded into one of the flanges and nut structure positioned between said flanges and threaded onto said threaded member,

(i) said threaded member having thereon a part bearing against a surface of one of said flanges so as to force said flanges together when said part is rotated in a tightening direction,

(j) said nut structure being axially movable on said threaded member between first and second positions, the nut structure when in said first position being tightened on said threaded member against one of said juxtaposed flanges thereby locking said flanges in said fixed-joint position, and the nut structure when in said second position being tightened against the other of said juxtaposed flanges thereby locking said flanges in said slip-joint position.

4,281,214

IGNITION COIL COVER

Yoshimi Miyamoto, and Tetsuo Tanigawa, both of Toyota, Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 19, 1979, Ser. No. 76,956

Claims priority, application Japan, Jan. 26, 1979, 54/9449[U]

Int. Cl.³ H01R *13/52, 39/60*

U.S. Cl. 174—138 F **2 Claims**

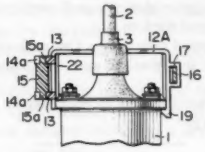
1. A cover for an ignition coil having a peripheral enlargement at the top thereof, said cover comprising:

first and second diametric cover segments defining, when assembled, an inverted cup;

a pair of vertically spaced lateral projections on said first cover segment along one side edge thereof;

a support shaft integrally formed on said second cover segment at one side edge thereof for engagement with said pair of projections for pivotal opening and closing movements of said segments;

a locking member provided on one of said cover segments adjacent the other side edge thereof;



a first pawl member provided on the other of said cover segments adjacent the other side edge thereof for engagement with said locking member; and

second pawl members provided on said first and second cover segments to engage over the enlargement of the ignition coil to lock said cover thereto.

4,281,215

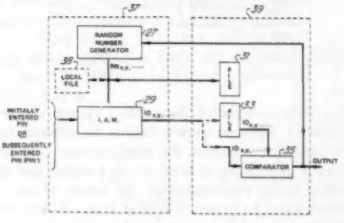
METHOD AND APPARATUS FOR SECURING DATA TRANSMISSIONS

Martin M. Atalla, Menlo Park, Calif., assignor to Atalla Technovations, Sunnyvale, Calif.

Filed May 3, 1978, Ser. No. 902,444

Int. Cl.³ H04L *9/00*

U.S. Cl. 178—22.08 **5 Claims**



1. A method of securing the identification of an individual in data-handling operations utilizing identification information supplied by the individual, the method comprising the steps of:

generating a selected number that is different for each data-handling operation;

producing a first identification code in response to the generated selected number and to first identification information supplied by an individual;

storing the generated selected number and the first identification code;

producing a second identification code in response to the stored selected number and second identification information supplied by an individual;

comparing the stored first identification code with the second identification code to determine the authenticity of the supplied identification information;

generating a second selected number that is different for each data-handling operation;

producing a third identification code in response to the second selected number and to the second identification information supplied by the individual; and

storing the second selected number and the third identification code for subsequent use.

2. A method of simultaneously securing transmitted data and

the identification of an individual in data transmission between stations utilizing identification information about the individual which is pre-stored and identification information supplied by the individual, the method comprising the steps of:

generating a selected number that is different for each data transmission;

producing a first encryption key in response to the generated selected number and to identification information supplied by an individual at a first station;

encoding data in ccordance with the first encryption key;

transmitting the generated selected number and the encoded data to a second station;

producing a second encryption key utilizing the pre-stored identification information and the transmitted selected number; and

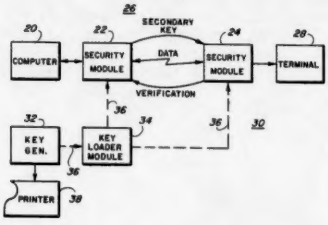
decoding the encoded data in accordance with the second encryption key.

4,281,216

KEY MANAGEMENT FOR ENCRYPTION/DECRYPTION SYSTEMS

Gerald J. Hogg, Tempe; Robert A. Newman, and Robert F. Pfeifer, both of Phoenix, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 2, 1979, Ser. No. 25,951
Int. Cl.³ H04L *9/00*
U.S. Cl. 178—22.08 **12 Claims**



1. In a data encryption/decryption system employing key word security wherein secure data is transferred between at least two security modules, the improvement comprising:

means for generating at least one key word, said generating means being responsive to the times of an operator's switch input to generate said at least one key word; and

keyloading means for storing and transporting said at least one key word, said key loading means and said generating means having interfaces thereon for transferring said at least one key word from said generating means to said keyloading means in a form readable only by the system.

4,281,217

APPARATUS AND METHOD FOR THE IDENTIFICATION OF SPECIALLY ENCODED FM STEREOPHONIC BROADCASTS

Ray M. Dolby, 50 Walnut St., San Francisco, Calif. 94118

Continuation-in-part of Ser. No. 890,498, Mar. 27, 1978, abandoned. This application Mar. 12, 1979, Ser. No. 19,666
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GN **28 Claims**

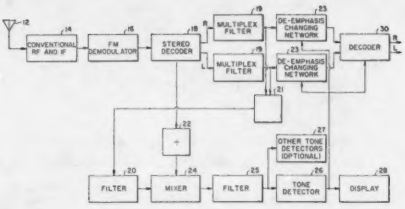
18. In a stereophonic FM transmission system, a method for providing an identification of specially encoded transmissions comprising

continuously generating an identification signal having a frequency in the audio spectrum, said frequency having the characteristics

that it is in the range of 12 kHz through 18 kHz in the upper frequency range of the transmission system, and

when mixed with a mixing frequency derived by multiplying and dividing the stereophonic subcarrier pilot signal frequency by whole integers it provides a low frequency signal in the range of 10 Hz through 3 kHz, and

transmitting said identification signal at an amplitude in the



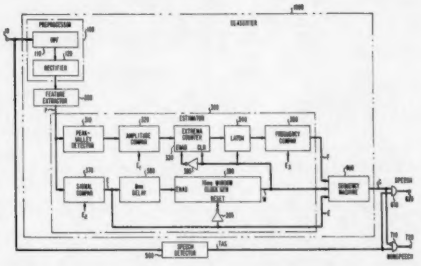
order of 70 dB below 100% modulation when there are no signals in said upper frequency range, whereby the identification signal is sufficiently low as not to be heard when the transmission is reproduced.

4,281,218

SPEECH-NONSPEECH DETECTOR-CLASSIFIER

Chin-Sheng Chuang, Marlboro, and Robert E. LaMarche, Atlantic Highlands, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 26, 1979, Ser. No. 88,634
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **3 Claims**



1. Apparatus for classifying a signal among one of a plurality of classifications, said classifying apparatus including an input terminal for receiving said signal to be classified, means coupled to said input terminal for classifying said signal, means for extending a classifying signal from said classifying means to an output terminal and characterized in that said classifying apparatus further comprises:

means for extending said signal to be classified through a feature extractor, said feature extractor for extracting at least one property of said signal to be classified,

an estimator responsive to said property for providing an estimate of said classification,

a sequency machine responsive to said estimate for providing said classifying signal,

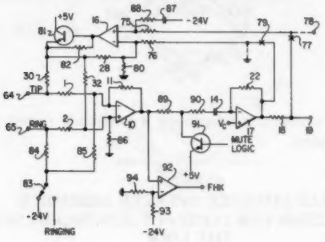
a speech detector responsive to said signal to be classified for providing a TAS signal, and

means responsive to said classifying signal and to said TAS signal for providing a methodology signal to at least one output terminal.

4,281,219
TELEPHONE LINE CIRCUIT

Michael C. J. Cowpland, Ottawa, and Patrick R. Beirne, Stittsville, both of Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Aug. 2, 1979, Ser. No. 62,989
Claims priority, application Canada, Feb. 1, 1978, 296137; Fed. Rep. of Germany, Jun. 23, 1979, 2925444
Int. Cl.³ H04Q *3/18*
U.S. Cl. 179—18 FA **7 Claims**

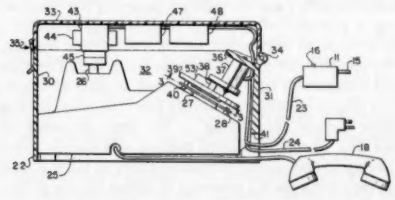


1. A telephone line circuit comprising:
(a) a balanced tip and ring lead for connection to a telephone set, and an unbalanced line output lead,
(b) first differential amplifier means having its input terminals connected through individual equal valued resistor means to the tip and ring leads, the values of each of the resistor means being at least ten times the off hook impedance of the telephone set,
(c) the output of the first differential amplifier means being connected in a circuit path to a line output lead, for applying outgoing signals thereto,
(d) second amplifier means having its input connected in a circuit path to a line input lead for receiving incoming signals,
(e) the output of the second amplifier means being connected in a circuit path to one of the tip or ring leads,
(f) the output of the second amplifier means also being connected by a further resistor means to the input of the first differential amplifier means which is connected to the other of the tip or ring leads,
(g) the value of the further resistor means being selected to apply sufficient output signal from the second amplifier means to said other input of the first differential amplifier means so as to substantially cancel signals within the first differential amplifier means appearing at its input terminals which were applied from the output of the second amplifier means to the tip and ring leads.

4,281,220
TELEPHONE DIALING AND ANSWERING DEVICE

George E. Frailey, R.D. 2, Box 152, New Milford, Pa. 18834

Filed Feb. 15, 1980, Ser. No. 121,652
Int. Cl.³ H04M *1/31*
U.S. Cl. 179—90 AD **5 Claims**

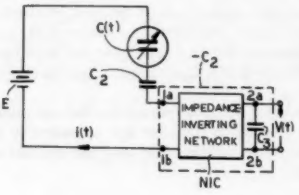


1. An apparatus for use by a handicapped person to operate a telephone instrument of the type having a handset, a base, means on the base defining a handset receiving location, a hook switch, a hook switch button protruding into the handset receiving location, a dial rotatable in a first direction to select a digit to be selected as part of a number being called, the dial being provided with spring return to generate a signal representative of the selected digit, the dial having angularly spaced finger holes and the base having a finger stop adjacent the dial, the apparatus comprising the combination
a switch unit having first and second manually operable switch means therein and first and second operator arms extending therefrom to facilitate selective operation of said switches by the person;
a housing dimensioned to at least partially enclose the base of the telephone;
means on said housing for releasing the hook switch button in response to momentary actuation of said first switch;
a dial engaging member including a drive pin engaging a finger hole in said dial;
a motor supported by said housing and electrically connected to said second switch, said motor having an output shaft coupled to said dial engaging member for rotating said member and said
dial during actuation of said second switch;
a light;
means responsive to rotation of said dial and dial engaging member for energizing said light each time a finger hole reaches said finger stop and for deenergizing said light as the hole passes said stop such that a count of the number of energizations of said light indicates the digit which will be dialed when said second switch is released.

4,281,221
CONDENSER MICROPHONE

Vincenzo DelBello, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jul. 11, 1979, Ser. No. 56,648
Claims priority, application Italy, Jul. 12, 1978, 25585 A/78
Int. Cl.³ H03F *1/34*; H04R *3/00, 19/00*
U.S. Cl. 179—111 R **4 Claims**

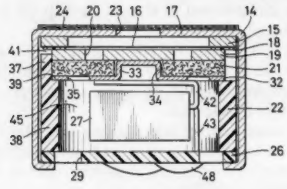


1. An electroacoustic transducer comprising:
a condenser of a capacitance variable in response to changes in ambient air pressure;
a source of d-c voltage;
a circuit of insignificant ohmic resistance connecting said condenser across said source;
two reactive impedance elements with reactances of equal frequency-dependent magnitude and opposite sign connected in series with each other and with said condenser and said source in said circuit, one of said impedance elements being a first capacitor, the other of said impedance elements being an impedance-inverting four-terminal network with output terminals connected across a second capacitor; and
a pair of load terminals connected across one of said impedance elements.

4,281,222
MINIATURIZED UNIDIRECTIONAL ELECTRET MICROPHONE

Sadayoshi Nakagawa, and Mitsuharu Shinohara, both of Fukuoka, Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Sep. 21, 1979, Ser. No. 77,702
Claims priority, application Japan, Sep. 30, 1978, 53-135215[U]
Int. Cl.³ H04R *19/04*
U.S. Cl. 179—111 E **7 Claims**



1. A miniaturized unidirectional electret microphone comprising:

a tubular case having at one end a front end plate formed integrally therewith, the front end plate having a hole therein for introducing sound into the case;

an electret diaphragm disposed in the case in opposing relation to the front end plate;

a back electrode disposed in the case in opposing relation to the electret diaphragm;

a damper cloth disposed in contact with the back of the back electrode, said damper cloth having a hole therein;

a terminal plate disposed behind the damper cloth, said terminal plate having a projection which is connected with said back electrode through said hole in the damper cloth;

a tubular back electrode holder disposed in the case coaxially therewith for holding the terminal plate, the damper cloth and the back electrode together;

a printed circuit board disposed at the back of the back electrode holder to close its rear open end, thereby to define a rear compartment in the back electrode holder;

an impedance converter formed on said printed circuit board in the rear compartment and connected with the terminal plate for converting an input into a low-impedance output; and

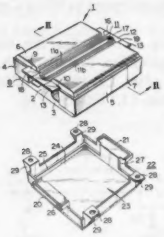
a sound hole for intercommunicating the rear compartment and the outside of the case and operative to introduce sound from the outside of the case into the said rear compartment.

4,281,223
ELECTRO-ACOUSTIC TRANSDUCER

Masana Ugaji, Tokyo; Hideo Suyama, Yokohama; Sadaaki Sakurai, Tokohama; Shigenori Yamaoka, Yokohama; Toshinaga Endo, Yokohama, and Akinobu Kusuhara, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 14, 1979, Ser. No. 66,381
Claims priority, application Japan, Aug. 18, 1978, 53-100532
Int. Cl.³ G10K *13/00;* **H04R** *7/00*
U.S. Cl. 179—115 R **19 Claims**

1. An electro-acoustic transducer, comprising a magnetic circuit having at least one air gap; current conducting means disposed in the air gap of said magnetic circuit to form a voice coil, and a vibratory structure mechanically coupled to said voice coil, said vibratory structure being comprised of a heat resistant film containing an epoxide-modified resin in which a



heterocyclic compound containing a polyimide group is the main component.

4,281,224
GRILLE COVERED SPEAKER ASSEMBLY CONSTRUCTION FOR COMPACT AUTOMOBILES AND THE LIKE

John F. Castagna, Brooklyn, N.Y., assignor to Sparkomatic Corporation, Milford, Pa.

Filed Apr. 21, 1980, Ser. No. 142,459
Int. Cl.³ B60R *11/02;* **G12B** *9/02;* **H04R** *1/02*
U.S. Cl. 179—146 R **13 Claims**

1. A multirange thin speaker assembly for installation in automobile doors and like constricted space installations in compact automobiles and the like with the front of the assembly facing inwardly of the automobile to project sound toward the automobile interior, comprising a main speaker section including a speaker basket frame having an outer generally annular rim portion supporting an anchor ring member and mounting formations for receiving front mounting fasteners to fix the speaker basket frame against an interior wall portion of the automobile door by outwardly directed fasteners applied from the automobile interior, the main speaker section including a woofer speaker unit comprising a speaker magnet and pole structure supported rigidly from the basket frame and a deformable woofer cone peripherally supported from said rim portion having a voice coil carried thereby movable in a gap in the pole structure, bridge structure supported by said rim portion having a higher-frequency-range second speaker unit carried thereby forwardly of said voice coil in the direction of sound projection, a front grille panel of unitary plastic material to be assembled in a snap-on manner onto the main speaker section, the grille panel including a generally flat panel portion having a plurality of openings therethrough disposed in an array to form an interrupted sound transmitting opening forwardly aligned with the woofer cone and a pair of transversely spaced arcuate rear snap ring segments forming an interrupted annular ring projecting rearwardly from the panel portion of a diameter closely conforming to the inner diameter of said anchor ring member to interfit therein, said anchor ring member having a retaining lip formation about its inner edge defining a rearwardly facing retaining shoulder for the grille panel and said snap ring segments having radially outwardly projecting bead formations to snap behind said retaining shoulder to fasten the grille panel to the anchor ring.

4,281,225

PICKUP CARTRIDGE FOR REPRODUCING SIGNALS RECORDED ON A 45-45 STEREOPHONIC RECORD DISK

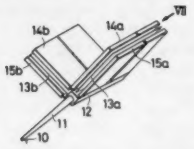
Tsugio Ito; Kenshiro Aizawa, and Hisashi Okada, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 8, 1979, Ser. No. 1,826

Claims priority, application Japan, Jan. 17, 1978, 53-3634[U]; Apr. 24, 1978, 53-54518[U]; Oct. 3, 1978, 53-135702[U]; Oct. 3, 1978, 53-135703[U]; Oct. 3, 1978, 53-135704[U]

Int. Cl.³ H04R 9/16

U.S. Cl. 369—139 33 Claims



1. An improved pickup cartridge for reproducing signals recorded on a sound groove of a record disk wherein the groove is defined by wall surfaces having undulations thereon, the cartridge comprising:

a vibration system including a stylus tip for engaging the wall surfaces and moving in accordance with the undulations as the disk is displaced with respect to the stylus tip, an elongated cantilever carrying the stylus tip and movable in accordance with movement of said stylus tip, and means for supporting said cantilever to permit movement thereof; and

a movement-electromagnetism conversion system responsive to the movement of said cantilever for converting said movement to electrical signals equivalent to the signals recorded on the sound groove, the improvement involving said movement-electromagnetism conversion system wherein the system includes:

at least one magnetic field producing means, each having an air gap and producing discrete first and second magnetic fields traversing respective adjacent first and second portions of said air gap, said first and second magnetic fields having substantially uniform intensity and oppositely directed magnetic fluxes with a sharp transition therebetween, said magnetic field producing means including:

a first pair of permanent magnet poles of opposite polarity separated by said first air gap portion and facing each other through said first air gap portion for producing said first magnetic field, and

a second pair of permanent magnet poles of opposite polarity separated by said second air gap portion and positioned adjacent said first pair of permanent magnet poles, said second pair of permanent magnet poles facing each other through said second air gap portion and having pole polarities arranged inverse to the pole polarities of said first pair of permanent magnet poles relative to said air gap, for producing said second magnetic field; and

at least one voltage-generating coil, each being associated with a respective one of said at least one magnetic field producing means and mechanically coupled to said cantilever and movable within the air gap of said associated magnetic field producing means in response to movement of said cantilever to cut perpendicularly the respective magnetic fluxes in said first and second magnetic fields of said associated magnetic field producing means to produce said electrical signals therein, and neutrally positioned in the air gap of said associated magnetic field producing means in such a manner that substantially one half thereof is located within said first magnetic field and substantially the other half thereof is located within said second magnetic field.

4,281,226

IGNITION SWITCH

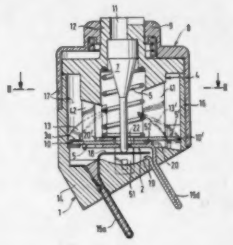
Werner Berginski, Werdohl-Eveking, Fed. Rep. of Germany, assignor to Firma Leopold Kostal, Luedenscheid, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 90,990

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849914

Int. Cl.³ H01H 27/00, 1/20

U.S. Cl. 200—44 8 Claims



1. An ignition switch comprising a part defining a generally cylindrical socket provided with a hood covering the socket and enclosing the components of the switch, a central contact and edge contacts in said socket, a rotatable switching wheel in said socket, two contact bridges having switching arms at their ends for engagement with said edge contacts and arranged to be driven in rotation by said switching wheel, said contact bridges being substantially planar with one in direct and permanent contact with said central contact and the other in direct and permanent contact with said one bridge, a single pressure spring in said switching wheel acting to urge the switching arms of both said bridges toward said edge contacts, diametrically opposed helical sections projecting radially inwardly of said socket into the path of rotation of said switching arms whereby rotation of said switching wheel causes said planar bridges to tilt and said switching arms to ride up said helical sections and drop from upper ends thereof and impact on certain of said edge contacts under the influence of said pressure spring.

4,281,227

DRAWOUT SWITCHGEAR WITH BLOW-OUT PREVENTION DEVICE

James O. Rexroad, Beaver, and John P. Majcher, Chippewa Twp., Beaver County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

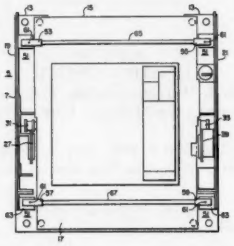
Filed Apr. 25, 1979, Ser. No. 33,061

Int. Cl.³ H01H 9/20

U.S. Cl. 200—50 AA 1 Claim

1. Drawout switchgear comprising a cell having a front opening, a circuit interrupting unit movable into and out of the cell, stationary terminal means supported in the cell, movable-terminal means on said unit and in electrical engagement with the stationary terminal means when the unit is in the cell, stop means releasably mounted between the cell and the unit for preventing the unit from moving out of place when high magnetic forces occur, the stop means comprising at least two clamps pivotally mounted on the cell and movable into and out

of the path of movement of the unit within the cell, and the stop means also comprising clamp-engaging stop bars on the



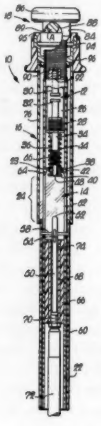
front surface of the unit and detachably mounted between corresponding clamps.

4,281,228

TOOL FOR MAKING AND BREAKING LOAD CURRENTS

Robert W. Harmon, Rte. 4, Centralia, Mo. 65240

Filed Apr. 2, 1979, Ser. No. 25,903
Int. Cl.[3] H01H *3/54, 9/16, 9/30*
U.S. Cl. 200—51 R **4 Claims**



1. A portable tool for making and breaking load currents, comprising:

a first pair of electrical load-making and breaking contacts, at least one of said contacts of said first pair being shiftable relative to the other contact thereof for closing and opening of the first contact pair;

a second contact pair, at least one of the contacts of said second contact pair being shiftable relative to the other contact thereof for closing and opening of the second contact pair;

means for electrically connecting said first and second contact pairs in series;

mechanism for breaking a load current passing through said contact pairs, when both of the latter are closed, by sequentially opening said first contact pair and thence opening said second contact pair, and for making a load current through said contact pairs, when both of the latter are open, by sequentially closing said second contact pair and thence closing said first contact pair,

said mechanism including

structure operatively interconnecting the shiftable contact of said first pair thereof, and a shiftable contact of said second pair thereof, for movement of the interconnected contacts in unison;

means for biasing said interconnected contacts in a direction for opening the first contact pair;

means for selectively shifting the free contact of said second pair thereof in a direction, when both of said contact pairs are open, for engaging the interconnected contact of said second pair and closing the latter, overcoming the bias of said biasing means, and shifting the shiftable contact of said first pair into operative engagement with the remaining contact of the first pair for closing the latter, and alternatively in a direction, when both of said contact pairs are closed, for opening of said first and second contact pairs, said shifting means comprising an elongated first tubular member enclosing said first and second contact pairs, an outer second tubular member telescoped over said first member and axially shiftable relative to the latter, and means operatively interconnecting said outer tubular member and said free contact of said second pair thereof for axial reciprocation of the latter within said first tubular member in response to corresponding reciprocation of said second tubular member;

means for selectively and releasably latching said contact pairs in a closed condition,

said biasing means being constructed and arranged for exerting sufficient biasing force on said interconnecting contacts such that when both of said contact pairs are open and the free contact of said second pair is shifted toward the interconnected contact of the second pair, said second contact pair is initially closed whereupon said first contact pair is closed for making a load current path through said contact pairs, and such that, when both of the said contact pairs are closed and said latching means is released, said interconnected contacts are initially shifted under the influence of said biasing means to thereby open said first contact pair, whereupon additional shifting of said free contact of said second pair thereof serves to open said second contact pair;

means for suppressing arcing between said first contact pair during said closing and opening thereof; and

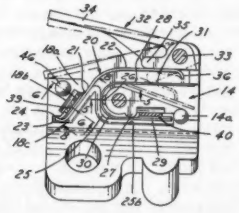
means for temporarily electrically connecting both of said series-connected contact pairs between a pair of conductors.

4,281,229

BUZZER SWITCH

Nicholas A. Poleschuk, Farmington, and Samuel E. Purdy, Ortonville, both of Mich., assignors to Beta Manufacturing Corp., Warren, Mich.

Filed Aug. 1, 1979, Ser. No. 62,719
Int. Cl.[3] H01H *3/16*
U.S. Cl. 200—52 R **14 Claims**



1. A buzzer switch comprising

a body of plastic material including a laterally extending first slot within said body,

a first contact made of electrically conducting spring material,

said first contact having a first portion thereof in said first slot and a second portion thereof extending from said first slot in cantilever fashion adjacent the upper end of said body,

said body having a second slot within said body,

a second contact of electrically conducting spring material capable of flexing the same degree as said first contact,

said second contact having a first portion thereof within said second slot and a second portion thereof extending in cantilever fashion in generally the same direction as the cantilever portion of said first contact,

a cover closing said body and covering said contacts,

an actuator pivoted to said body and having a rotatable portion thereof adapted to rotatably engage and move said cantilever portion of said first contact inwardly of said body into contact with said second contact such that upon initial movement of said actuator by a force on said actuator, the first contact is flexed into engagement with said second contact and continued movement of said actuator causes said first and second contacts to flex while maintaining contact therebetween, and such that when the force on said actuator is removed, the first contact returns to its original position and in turn the actuator returns to its original position and the second contact also returns to its original position.

4,281,230

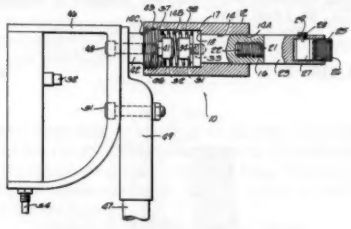
ANTI-ARC PROD

Carl A. Naylor, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 4, 1979, Ser. No. 81,937

Int. Cl.³ H01H *3/16*

U.S. Cl. 200—61.58 R **6 Claims**



1. An anti-arc prod for magnetic particle testing of a surface of a part;

a handle;

a body member having an axial opening carried by said handle;

a movable member slidably carried within the axial opening of said body member;

a prod tip removably secured to said movable member for axial movement relative to said body member;

a pair of normally open contact means within the axial opening of said body member; said normally open contact means being movable to a closed position upon pressure engagement of said prod tip with the surface of a part to be tested;

yieldable means operating between said contact means carried within the axial opening of said body member and normally operating to maintain said contact means in their normally open position;

current carrying means for connection between a current source of high amperage/low voltage electricity and one of said contact means, and;

a power switch carried by said handle and operable when actuated to effect the flow of current from a source of high amperage/low voltage electricity through said contact means to said prod tip.

4,281,231

HIGH TENSION VACUUM SWITCHES

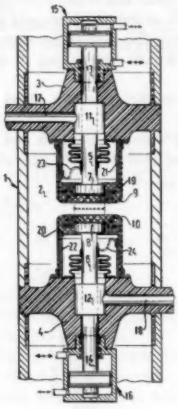
Bertus Griesen, and Harry C. W. Gundlach, both of Hengelo, Netherlands, assignors to Hazemeijer B.V., Hengelo, Netherlands

Filed Nov. 15, 1978, Ser. No. 960,938

Claims priority, application Netherlands, Nov. 23, 1977, 7712932

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **9 Claims**



1. In a high tension vacuum switch of the type having first and second switching contacts, means for axially moving at least one of said contacts back and forth between an open condition in which the two contacts are spaced apart and a closed condition in which the contacts are engaged, and shielding electrode means surrounding and enclosing said contacts when the switch is in said open condition for allowing said contacts to withstand high voltages, without arcing, despite contact-roughness thereof due to prior arcing incidental to switching, the improvement wherein said shielding means comprises first and second outer hollow conductors respectively surrounding said first and second contacts, said hollow conductors having adjacent end portions which are disposed in axially spaced relation when the contacts are in open condition and which end portions extend beyond their respective contacts when the contacts are in such open condition whereby to locate such contacts in regions of relatively low-intensity electric field when in open condition, means mounting at least one of said hollow conductors in electrically insulated relation to its respective contact, and capacitance means connected electrically to said respective contact for capacitively coupling said one hollow conductor to its respective contact.

4,281,232

SMALL ILLUMINATING SWITCH

Akira Hirai; Yukihisa Tanaka, and Shigeo Ohashi, all of Tokyo, Japan, assignors to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,618

Int. Cl.³ H01H *9/16*

U.S. Cl. 200—315 **10 Claims**

1. An illumination-type small sized toggle lever switch comprising:

a housing having at least one open end;

main contact contained in the housing and having at least

one first movable contact element and at least one first fixed contact element;

a cover member mounted on the open end of the housing said cover member including a cover mounted on the open end of the housing and a sleeve mounted on said cover;

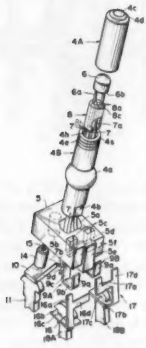
a movable operating handle comprising a cylindrical member having a hollow interior space extending longitudinally therethrough, said movable operating handle having two open ends, one open end being disposed within said housing and the other open end projecting from said sleeve;

an illuminator having terminals and being disposed in said hollow interior space and at said open end of said movable operating handle projecting from said sleeve;

a convertor member disposed at the other end of the movable operating handle for making or breaking the main contacts;

second movable contact elements fitted to the convertor member;

lead wires having bare end portions and extending in said interior space of said movable operating handle there-



through for electrically connecting said illuminator to said second movable contact elements;

an insulating member being contained in said hollow interior space of said movable operating handle, said insulating member having at least two through bores through which said lead wires are led so as to be electrically connected with said illuminator;

said convertor member being formed with a through opening into which said open end of the movable operating handle is fitted, and said lead wires being passed through said opening so as to be connected with said second movable contact elements;

said movable operating handle consisting of a first cylindrical member and a second cylindrical member, said first cylindrical member containing said illuminator and said insulating member;

said movable operating handle having a swivel portion which is received by a swivel receiver formed on the inner wall of said sleeve so that the handle can be swiveled about the swivel receiver portion as a fulcrum; and

second fixed contact elements disposed within the housing and which the second movable contact elements are brought into contact.

4,281,233

HYDROPHILIC MACROPOROUS THREE DIMENSIONAL COPOLYMERS OF HYDROXYALKYL ACRYLATES OR METHACRYLATES WITH CROSSLINKING AGENTS AND THE METHOD OF THEIR MANUFACTURING

Jiri Coupek; Karel Filka, and Jan Kocourek, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Division of Ser. No. 900,892, Apr. 28, 1978. This application Jul. 21, 1980, Ser. No. 170,767

Int. Cl.[3] **B01J** *20/26;* **C08J** *9/36*

U.S. Cl. 260—112 R **1 Claim**

1. An affinity chromatography process for the isolation of physiologically effective materials from active protein comprises:

(a) applying a physiologic saline solution of said protein to a column of hydrophilic macroporous three dimensional copolymer of a hydroxyalkyl acrylate or a hydroxyalkyl methacrylate, said hydroxyalkyl containing 1 to 4 carbon atoms, and containing a crosslinking agent in the amount of 15 to 50 weight percent selected from the group consisting of ethylene diacrylate and ethylene dimethacrylate, wherein said copolymer contains, after glycosylation reaction at the surface, saccharides or their derivatives, selected from the group consisting of monosaccharides, oligosaccharides, deoxy sugars, amino sugars, acylated saccharides, either or halogen derivatives of monosaccharides and oligosaccharides, equilibrated with physiologic saline solution;

(b) eluting said column with physiologic saline solution; and

(c) recovering fractions active in haemaglutination.

4,281,234

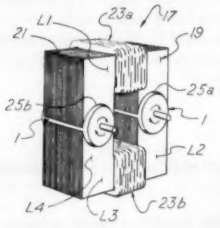
METHOD OF INDUCTION ANNEALING SQUIRREL CAGE ROTORS

L. Ranney Dohogne, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 20, 1979, Ser. No. 31,772

Int. Cl.[3] **H05B** *6/06;* **H02K** *15/02*

U.S. Cl. 219—10.43 **6 Claims**



1. The method of fabricating squirrel cage rotors having enhanced electrical conductivity over "as cast" rotors, said rotor having a core made of a stack of plate-like laminations of suitable ferro-magnetic material, said core having a central longitudinal axis and a plurality of slots spaced around said central longitudinal axis proximate the outer surface of the core and extending substantially lengthwise through the core, said rotor having conductor bars of suitable aluminum material die cast in place within said slots and end rings of die cast aluminum at the ends of the conductor bars integral with and interconnecting the connector bars, said conductor bars and said end rings constituting a rotor cage, wherein the method of this invention comprises the steps of:

placing a rotor within a gap of the core of an induction heating apparatus;

energizing said induction heating apparatus with relatively low frequency alternating current so as to generate an alternating magnetic field which passes generally radially

through said rotor and which induces heating of said conductor bars and end rings;

rotating said rotor about its longitudinal axis so as to ensure substantially uniform heating of the conductor bars and the end rings of its rotor cage; and

continuing to energize said apparatus and to rotate said rotor thereby to heat said conductor bars and end rings to a temperature sufficient to enhance the electrical conductivity of said conductor bars and said end rings and so as to result in the heating of said core to a lower temperature.

4,281,235

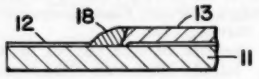
METHOD FOR WELDING FERROUS ALLOYS TO ALUMINUM AND ALUMINUM ALLOYS OR REFRACTORY METALS

Conrad Peloquin, San Leandro, Calif., assignor to Tri Delta Industries, Inc., Hayward, Calif.

Filed Oct. 9, 1979, Ser. No. 82,983

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 ED **12 Claims**



1. A method for joining a first metal having a higher melting point to a second metal having a lower melting point, said first and second metals being substantially insoluble in one another, comprising depositing a thin layer of a third metal on the surface of one of said first and said second metals, placing the other of said first and said second metals in contact with said thin layer of third metal, directing a high energy particle beam over an area including the first metal, the second metal, and the third metal to heat the first metal, to partly melt the second metal, and to at least partly dissolve the third metal in the second metal, and cooling the resultant weld, said third metal melting at a temperature intermediate the melting temperature of said first metal and said second metal and being capable of wetting said first metal.

4,281,236

PROCESS FOR THE MANUFACTURE OF ELECTRICAL CONTACTS UPON SEMICONDUCTOR COMPONENTS

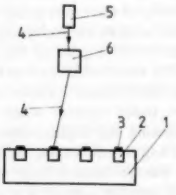
Martin vonAllmen, Pasadena, Calif., and Marc Wittmer, Baden, Switzerland, assignors to BBC Brown, Boveri & Co Limited, Baden, Switzerland

Filed Sep. 26, 1979, Ser. No. 79,216

Claims priority, application Switzerland, Oct. 31, 1978, 11195/78

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC **6 Claims**



1. A process for the manufacture of electrical contacts on semi-conductor components, wherein a metallic layer having a thickness of between 0.05 and 0.3 μm is placed upon the surface of a semiconductor component with which contact is to be made, and the metallic layer is then sintered by heating to a predetermined temperature, comprising:

irradiating the metallic layer with laser light having an energy density between 1 and 3 Joule/cm² and an intensity sufficient to bring the metallic layer and the semiconductor material adjacent the metallic layer to the melting point.

4,281,237

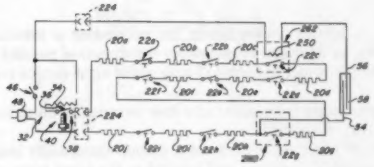
SAFETY CIRCUIT FOR ELECTRIC BEDCOVER

Allen V. Berenson, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,509

Int. Cl.³ H05B *1/02;* **H02H** *1/02*

U.S. Cl. 219—511 **3 Claims**



1. In an electric bedcover of a type comprising

a fabric shell, which has plural plies and a network of serpentine passages within said plies,

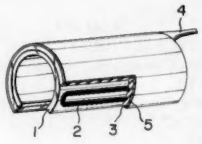
an elongated flexible heater, which is deployed throughout at least some of said passages, and

a safety thermostat, which is connected in series with at least part of said heater and with plural conventional thermostats, which is located within said network of serpentine passages, which comprises a bimetallic element and electrical contacts arranged to be opened and closed by said bimetallic element, and which is operative to disconnect at least part of said heater from a source of electrical power at said contacts when said bimetallic element is heated sufficiently and to reconnect the same part of said heater to the source of electrical power through said contacts when said bimetallic element is cooled sufficiently, an improvement wherein an elongated flexible sensor, of a type comprising a pair of elongated flexible electrical conductors spaced from each other by an elongated flexible layer of material having a negative temperature coefficient of resistance, is deployed through at least some of said passages, wherein a resistor is mounted for heat dissipation from said resistor to the bimetallic element of said safety thermostat, and wherein a first circuit branch comprising said resistor, said conductors, and said layer, in series with each other, is confined by and embodied entirely within said network of serpentine passages so as not to require additional leads extending from the fabric shell and connected in parallel with a second circuit branch comprising at least part of said heater so as to maintain said conductors at relatively different electrical potentials at least when said heater operates, so as to conduct essentially no current except when said layer acts as an electrical conductor having low impedance rather than as an electrical insulator having high impedance, and so as to conduct sufficient current to cause said resistor to dissipate sufficient heat to cause said bimetallic element to open said contacts when some part of said layer is heated so as to act as an electrical conductor having low impedance rather than as an electrical insulator having high impedance, whereby said bimetallic element receives essentially no heat from said resistor except when said layer thus acts as an electrical conductor.

4,281,238
TUBULAR JACKET HEATER

Hideyuki Noma, Ageo, and Takaaki Nakano, Omiya, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Japan

Filed Sep. 12, 1979, Ser. No. 74,733
Claims priority, application Japan, Sep. 18, 1978, 53-114305
Int. Cl.[3] H05B *3/58*
U.S. Cl. 219—535 5 Claims



1. A tubular jacket heater for preheating a tubular lamp having an aperture extending in the direction parallel to the axis of the heater to form a C-wise radial cross section comprising

(a) an inner layer made of a first electrically insulating rubbery elastomer,

(b) an outer layer made of a second electrically insulating rubbery elastomer and bonded to the inner layer, and

(c) a flexible heater element embedded in said heater and comprising an undulating wire having longer segment portions extending co-axially of the layers and with shorter connecting segment portions extending generally circumferentially of the layers,

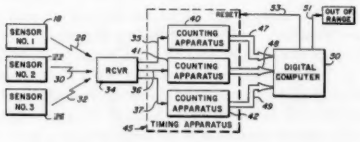
the first and the second electrically insulating rubbery elastomers are silicone rubbers,

the hardness of the first and the second electrically insulating rubbery elastomers is in the range from 40 and 70 by this JIS scale.

4,281,239
TIMING APPARATUS AND METHOD

Michael D. Coon, Mesa; Martin K. Grace, Scottsdale, and Steven R. Smith, Mesa, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 23, 1979, Ser. No. 59,815
Int. Cl.[3] G06M *3/08*
U.S. Cl. 235—92 GA 8 Claims



1. In a projectile scoring system of the type including a transmitter for illuminating the projectile and a plurality of spaced apart sensors receiving reflected energy from the projectile and connected to provide signals indicative of the reflected energy at each of the sensors to a computer designed to calculate the position of the projectile relative to the sensors, improved timing apparatus comprising:

(a) a clock pulse generator;

(b) a plurality of counters, one associated with each sensor, each having an input coupled to said clock pulse generator for receiving pulses thereon and an input adapted to be connected to the computer, and each counter being constructed to provide a pulse at a second output when a predetermined count is reached;

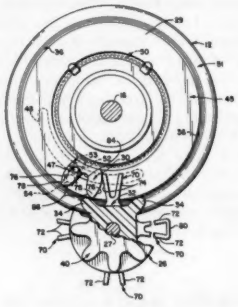
(c) gate means connected to the second output of each of said counters and providing a pulse at an output thereof when a first pulse from one of said counters is received; and

(d) switching means connected to said plurality of counters and adapted to be coupled to the sensors for enabling each of said counters in response to a signal from the associated sensor, said switching means further being connected to said gate means for receiving the output pulse therefrom and deactivating all of said counters simultaneously.

4,281,240
FUEL PUMP COUNTER TRANSFER MECHANISM

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Dec. 10, 1979, Ser. No. 101,838
Int. Cl.[3] G06C *7/10;* F16H *57/00*
U.S. Cl. 235—139 R 14 Claims

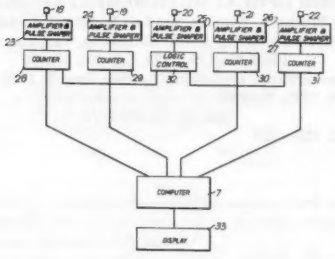


1. In a rotary counter having at least two coaxial counter wheels of ascending order of significance adapted to be rotated in a first angular direction thereof for accumulating a count, each pair of adjacent counter wheels of higher and lower order having respectively a wheel drive gear and a transfer ring with a two-tooth transfer gear segment and locking ring, and a rotary transfer pinion intermediate each pair of adjacent counter wheels of higher and lower order having an input gear section with an even plurality of teeth in operative engagement with the transfer ring of the lower order counter wheel and an output gear section with an even plurality of teeth in operative engagement with the drive gear of the higher order counter wheel and whereby the transfer pinion is intermittently angularly indexed a predetermined transfer angle thereof by rotation of the lower order counter wheel in said first angular direction, for indexing the higher order counter wheel one count in said first angular direction, the improvement wherein at least the tens transfer pinion intermediate the lowest and next lowest order counter wheels is a special transfer pinion having an input gear section with first alternate teeth and second different elongated alternate teeth extending radially outwardly of the first teeth and having a tooth profile for initial engagement with and disengagement from the leading and trailing edges of the two-tooth gear segment radially inwardly of the root circle thereof to reduce the rate of acceleration and deceleration of the transfer pinion at the beginning and end of its transfer angle.

4,281,241
FIRING RANGE

Lindsay C. Knight, Albury, Australia; David A. Cash, Camberley, England; Duncan Stewart, Farnham Common, England; Robert A. Cottis, Maidenhead, England; William H. Bowyer, Farnham, England; Robert C. Newnham, Slough, England; Frederick J. Williams, Meppershill, England, and David W. Pardon, Bennington, England, assignors to Australasian Training Aids (Pty.) Ltd., Albury, Australia

Continuation of Ser. No. 879,458, Feb. 21, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,218
Claims priority, application United Kingdom, Feb. 21, 1977, 7253/77
Int. Cl.[3] F41J 5/12; G06F 15/20
U.S. Cl. 235—400 64 Claims



1. Apparatus for determining the location in a predetermined two-dimensional target area adjacent a target member through which the trajectory of a supersonic projectile passes, said projectile originating from a firing point and directed toward said target member, the apparatus comprising:

at least four transducers,

means for positioning said at least four transducers in a generally horizontal elongate array adjacent a lower edge of the predetermined target area,

said transducers positioned spaced apart one from the other at respective predetermined locations,

each said transducer comprising means for providing an output signal in response to an airborne shock wave generated by the supersonic projectile,

individual threshold circuit means coupled to each transducer and responsive to said output signal for providing a digital signal when said output signal exceeds a predetermined threshold, the digital signal having a leading edge representing a time at which said airborne shock wave generated by the supersonic projectile impinges on the transducer, and

digital processing means, provided with data representing the respective predetermined locations at which the transducers are positioned, and operative for

(1) determining time differences between the leading edge of the digital signal associated with one of said transducers relative to the leading edge of the digital signal associated with each of the remainder of the transducers,

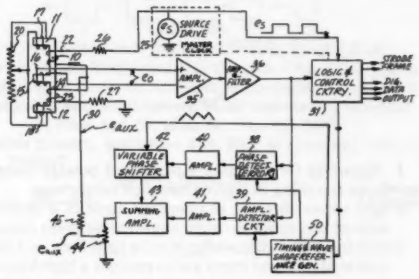
(2) calculating, from said determined time differences and from the data representing the respective predetermined transducer locations, the location in said predetermined target area through which said trajectory passes, and

(3) providing an indication of said calculated location.

4,281,242
BALANCING APPARATUS FOR MAGNETIC CIRCUITS EMPLOYED IN DATA STORAGE AND RETRIEVAL SYSTEMS

Robert S. Mannion, Carbondale, Pa., assignor to Continental Instruments Corporation, Hicksville, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,669
Int. Cl.[3] G06K 7/08; G11B 5/43, 5/20
U.S. Cl. 235—449 11 Claims



1. A balancing apparatus for providing a null at the output of a quadrature circuit of the type driven by a drive source for providing a first signal at a given frequency and of a reference phase and a second signal at the same frequency of a phase relatively about said reference phase, said circuit operating to provide a null signal at an output manifesting a zero voltage output during a balanced condition when said quadrature circuit is not effected by the presence of a desired unbalancing means, said quadrature circuit undesirably providing a random output signal at said frequency due to an undesired unbalance as manifested by an interfering external source, comprising:

(a) first means responsive to said random output signal to provide an amplified version of said signal at said given frequency,

(b) amplitude detecting means responsive to said random output signal to provide an amplitude compensating signal at said frequency indicative of the amplitude of said random signal,

(c) phase detecting means operative to provide a DC error signal indicative of the phase of said random signal with respect to a predetermined reference phase,

(d) phase comparator means operative to compare a reference waveform at a first input with a DC reference level at a second input to provide at an output, a phase compensating signal at said frequency having a phase indicative of the difference between said reference waveform and said DC level,

(e) means for generating a reference waveform indicative of a reference phase from said drive source for applying said reference waveform to said first input of said comparator means,

(f) means for applying said DC error signal to said second input of said comparator means to cause said comparator means to provide at said output, said phase compensating signal of a phase determined by said DC error signal,

(g) summing means responsive to said amplitude compensating signal and said phase compensating signal to provide at the output, a summed signal indicative of the phase and amplitude of said random signal, and

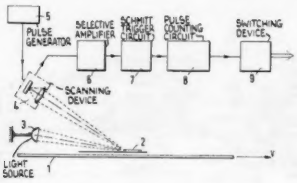
(h) means for applying said summed signal to said drive source to compensate for said random signal and therefore for said unbalance as manifested by said interfering external source.

4,281,243

APPARATUS FOR DETECTING POSTAGE STAMPS ON ENVELOPES

Heinz Hudler, Ketzergasse 389, 1235 Wien, Austria

Filed May 4, 1979, Ser. No. 35,961
Claims priority, application Austria, Jun. 8, 1978, 4101/78
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—223 R **14 Claims**



1. Apparatus for detecting a perforated postage stamp on envelopes travelling in a given direction comprising:

a light source directed to illuminate teeth of a perforated edge of said stamp at a right angle to said given direction;

a scanning device disposed to receive light from said illumination edge of said stamp and to produce a high frequency pulse train responsive to scanning said teeth of said illuminated edge of said stamp; and

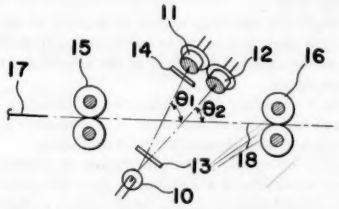
an evaluating circuit coupled to said scanning device responsive to said pulse train to provide an indication signal indicating the presence of said stamp.

4,281,244

APPARATUS FOR DETECTING SHEET-FORMED SUPPORT MATERIAL

Tomoji Murata, and Masazumi Ito, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 18, 1979, Ser. No. 49,642
Claims priority, application Japan, Jun. 17, 1978, 53/73567
Int. Cl.³ G02F *1/01*
U.S. Cl. 250—225 **8 Claims**



1. Apparatus for detecting a sheet-formed article passing along a predetermined path, said apparatus comprising:

a light source provided with a first polarizing means and a photoresponsive element provided with a second polarizing means, said light source and said photoresponsive element positioned adjacent said path of said sheet-formed article passing therebetween, the relative spacing relationship between a first plane of polarization of said first polarizing means and second plane of polarization of said second polarizing means so arranged that the amount of light received by said photoresponsive element is increased when a transparent sheet-formed article is passed across a light path orginating from said light source;

said apparatus further comprising another photoresponsive element disposed on the side opposite to said light source with respect to said predetermined path, said another photoresponsive element disposed with respect to said light source such that the amount of light received by said another photoresponsive element is decreased when a non-transparent sheet-formed article is passed across said light path originating from said light source;

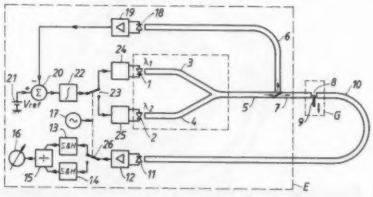
wherein said photoresponsive element and said another photoresponsive element are connected to a first electric circuit means for the detection of the passage of said sheet-formed article and connected to a second electric circuit means for the detection of the transparency of said sheet-formed article.

4,281,245

FIBER OPTICAL MEASUREMENT APPARATUS

Torgny Brogardh, Vasteras, and Leif Stensland, Jarfalla, both of Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed May 29, 1979, Ser. No. 43,031
Claims priority, application Sweden, Jun. 2, 1978, 7806486; Dec. 18, 1978, 7812949
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **26 Claims**



1. Optical measuring apparatus for measuring physical magnitudes, comprising:

electronic circuit means including at least one light source for emitting light and means for processing measuring signals;

a transducer for receiving said emitted light and including an optical modulator responsive to optical signals representing the measured physical magnitudes for modulating the light emitted from said at least one light source;

at least one optical fiber for conducting light between said at least one light source and said transducer;

said transducer further including at least one optical filter having a spectrally-varying absorbing, transmitting or reflecting characteristic within the spectra of the light emitted by said at least one light source, said at least one optical filter being positioned in the path of the light emitted from the transducer to generate at least one optical stabilization signal for stabilizing the optical signals in said at least one optical fiber and said means for processing measuring signals, and said at least one optical filter generating at least one optical measuring signal, said at least one fiber end in said transducer including an interference filter positioned adjacent thereto for generating a light signal in one wavelength range less dependent on the measured physical magnitude than the light within another, non-identical wavelength range of the light emanating from said transducer, the optical wavelength of said interference filter is changed by mechanical stresses induced in the interference layers thereof; and

said means for processing including means for detecting said at least one optical measuring signal.

4,281,246

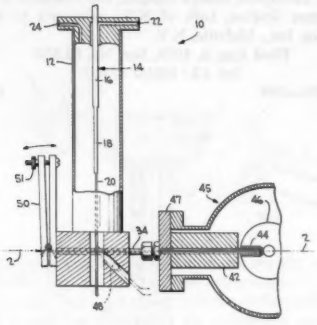
CONTINUOUS-FLOW SOLUTION CONCENTRATOR AND LIQUID CHROMATOGRAPH/MASS SPECTROMETER INTERFACE AND METHODS FOR USING BOTH

Edward White, V; Harry S. Hertz, and Richard G. Christensen, all of Gaithersburg, Md., assignors to The United States of America as represented by the Administrator of the United States Environmental Protection Agency, Washington, D.C.

Filed Oct. 12, 1979, Ser. No. 84,273

Int. Cl.³ B01D *59/44, 1/22*

U.S. Cl. 250—282 **35 Claims**



15. A method of conducting a liquid stream from a liquid chromatograph and introducing the stream into a mass spectrometer, said method comprising:

(a) transporting a liquid stream from one end of a tapered wire to the other end of said wire;

(b) heating said stream so as to evaporate a portion of said solvent from said liquid stream; and

(c) drawing and conducting said liquid stream from adjacent said second end of said wire along the inside of a tube towards said mass spectrometer.

4,281,247

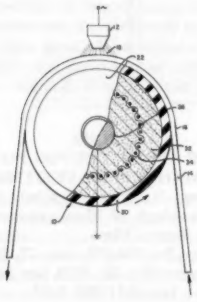
ROLLER ELECTRODE FOR USE IN APPARATUS FOR TREATING PLASTIC FILM WITH HIGH VOLTAGE CORONA DISCHARGE

Samuel J. Schuster, 617 Vallombrosa, Pasadena, Calif. 91107

Filed Nov. 5, 1979, Ser. No. 91,384

Int. Cl.³ A01T *19/04*

U.S. Cl. 250—324 **9 Claims**



1. A roller electrode for use in apparatus for treating plastic film with high voltage corona discharge, said electrode comprising:

a tubular outer casing of dielectirc material, the casing having opposite ends;

a shaft positioned coaxially of the casing and having end portions projecting from the ends of the casing, the inner surface of the casing and the outer surface of the shaft definng an annular cavity; and

an electrically conductive composition within the annular cavity, said composition comprising a cementitious matrix in which conductive particles are bound, the composition being in intimate contact with the inner surface of the casing and the outer surface shaft.

4,281,248

NONDISPERSIVE INFRARED GAS ANALYZER

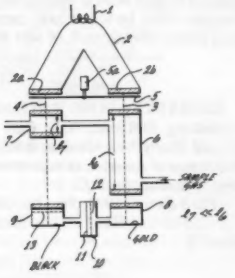
Walter Fabinski, Kriftel, and Udo Deptolla, Ober-Olm, both of Fed. Rep. of Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,364

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918207

Int. Cl.³ G01N *21/26*

U.S. Cl. 250—345 **5 Claims**



1. A nondispersive infrared gas analyzer having a source for infrared radiation as well as means for defining a first and a second path as well as chopper means for periodically interrupting radiation in each of said paths, further including first and second detection cells filled with gas of the type to be detected in the sample gas, the cells being respectively disposed in said first and second paths, there being additionally differential pressure sensing means with capacitive pickup connected to the first and second detection cells for responding to pressure differences in those detection cells and providing an electrical signal representative thereof, the improvement comprising:

a first and a second cell for sample gas, respectively disposed in the first and the second path, the first cell being significantly shorter in the direction of the first path than the second cell; and

the walls of the first detection cell absorbing more radiation than the walls of the second detection cells.

4,281,249

STEPPED SCANNER IMAGING SYSTEM

Stanley N. Lapidus, Bedford, N.H., assignor to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Jan. 14, 1980, Ser. No. 111,558

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—363 S **13 Claims**

1. A radiographic system comprising:

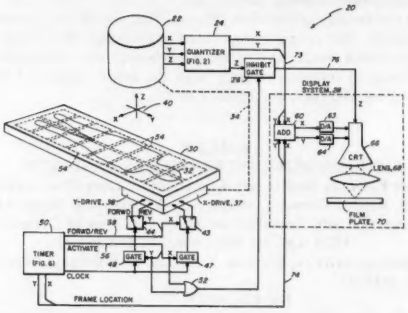
a camera for providing images of a subject;

a support for supporting said subject in view of said camera;

means coupled between said support and said camera for imparting a relative motion between said camera and said support, said motion being step-wise to provide a sequence of lateral displacements between said support and

said camera alternating with a sequence of substantially different, laterally displaced, fixed locations of said support relative to said camera;

means coupled to said camera for obtaining imaging data therefrom; and



means coupled to said motion means for inhibiting a flow of said imaging data between said camera and said data obtaining means during each of said displacements.

4,281,250

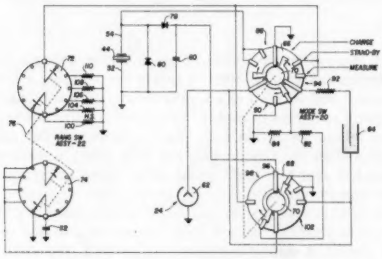
RADIATION DOSE RATE METER

Stanley Kronenberg, Skillman, N.J.; Carl R. Siebentritt, Mc Lean, Va., and Harry Van Gorden, Brick, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1980, Ser. No. 109,598

Int. Cl.³ H01J *39/29, 39/30*

U.S. Cl. 250—377 **10 Claims**



1. A radiation detecting instrument powered by charging means and being adapted to measure dose rate over a wide range, comprising, in combination: an electrostatic metering device including visual indicator means; a storage capacitor;

circuit means in a first mode of operation coupling said storage capacitor to said metering device for measuring the voltage appearing across said storage capacitor during operation of said charging means;

circuit means in a second mode of operation decoupling said storage capacitor from said metering device following said first mode of operation;

circuit means including a radiation sensitive charge transport device, in a third mode of operation, coupling said charge transport device between said storage capacitor and said electrostatic metering device, and additionally including means shunting said metering device to rapidly discharge the stray capacitance associated therewith to provide indications of individual rays of radiation being sensed; and

circuit means including a radiation sensitive charge transport device, in a fourth mode of operation, coupling said charge transport device between said storage capacitor and said electrostatic metering device and additionally including means coupled to said storage capacitor for providing a discharge circuit therefor and having a predetermined discharge time constant which is adapted to provide a predetermined operating time interval for said charge transport device whereby said metering device provides an indication of measured dose rate.

4,281,251

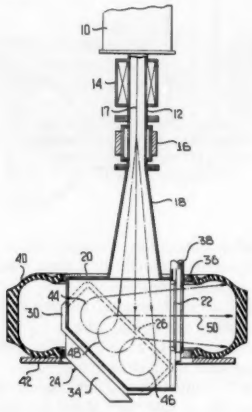
SCANNING BEAM DEFLECTION SYSTEM AND METHOD

Chester C. Thompson, Roslyn Heights, and Marshall R. Cleland, Huntington Station, both of N.Y., assignors to Radiation Dynamics, Inc., Melville, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,822

Int. Cl.³ H01G *37/00*

U.S. Cl. 250—398 **10 Claims**



1. A system for uniformly irradiating an object with a beam of charged particles comprising

means for forming a narrow beam of electrons directed along a predetermined central axis,

an evacuated chamber positioned to receive said beam and having an exit window generally parallel to said central axis,

first deflection means disposed between said means for forming and said evacuated chamber for deflecting said beam through predetermined angles to both sides of said central axis, and

second deflection means located at said evacuated chamber for rotating said beam through approximately 270° to exit through said window at the same angle relative to the undeflected beam as said beam bore to said central axis upon entering said evacuated chamber.

4,281,252

COUPLING APPARATUS FOR PORTABLE RADIOGRAPHY SYSTEMS

George W. Parsons, Jr., North Reading, and Riccardo A. Drainoni, Woburn, both of Mass., assignors to Technical Operations, Inc., Boston, Mass.

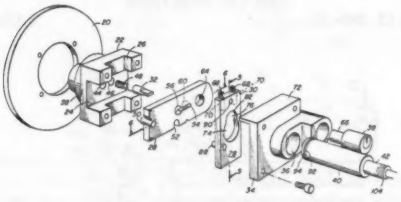
Continuation of Ser. No. 964,078, Nov. 27, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,464

Int. Cl.³ G21F *5/02*

U.S. Cl. 250—497 **17 Claims**

1. In radiographic apparatus for manipulating a quantity of radioactive material between a stored position and a use position including a capsule of said radioactive material, a storage unit with a passage through it for storing the capsule in the

passage and shielding the surrounding environment from the stored radioactive material, manipulating means for location remote from said storage unit, flexible conduit means connectible to said storage unit between one end of said passage and the manipulating means, and flexible elongated drive means movable within said conduit means and said passage for moving said capsule between a stored position and a use position under control of said manipulating means, the improvement comprising: disconnectible coupling means having a first component fixed to said storage unit at said one end of said passage and a second component of tubular shape fixed at one end to an end of said conduit means remote from said manipulating means, said first component having a tubular aperture for



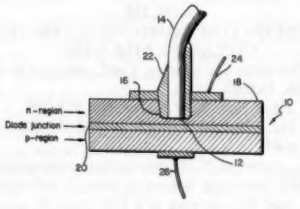
receiving said second component endwise therein, and means for releasably locking said second component to said first component, said locking means comprising a first slide member mounted in said first component for movement transverse to said tubular aperture between first and second limits, said first slide member having engagement means which extends into said tubular aperture when said first slide member is at said second limit, and is withdrawn from said tubular aperture when said first slide member is at said first limit, said second component having means to receive said engagement means in said tubular aperture for locking said second component against withdrawal from said tubular aperture when said first slide member is moved toward said second limit.

4,281,253

APPLICATIONS OF DUAL FUNCTION ELECTRO-OPTIC TRANSDUCER IN OPTICAL SIGNAL TRANSMISSION

William H. Culver, Gaithersburg, Md., assignor to Optelecom, Inc., Gaithersburg, Md.

Filed Aug. 29, 1978, Ser. No. 937,828
Int. Cl.³ H01L *31/12, 33/00*
U.S. Cl. 250—551 **12 Claims**



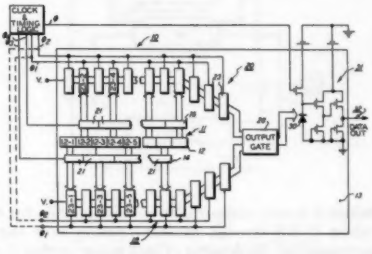
1. An invention including at least one optical fiber cable assembly for the transmission of signals in either direction from one end of the cable assembly to the other, said cable assembly being terminated at each of the two ends with an electrical connector, and each of said connectors containing at least one semiconductor diode which functions as a dual function transducer, said diode adapted to convert the signals both from optical to electrical form and from electrical to optical form, and said cable assembly having one or more optical fibers to transmit the signals in optical form between the transducer diodes, and the ends of said fiber being positioned approximately against the diodes so that the fiber axis is essentially perpendicular to the diode junction plane, the cable assembly further characterized in that the at least one semiconductor diode is provided with a well in the n-region to render the diode weakly absorbing of emitted and received radiation and the end of the fiber is positioned approximately against the n-region in said well.

4,281,254

SELF SCANNED PHOTOSENSITIVE ARRAY

Ned J. Seachman, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1979, Ser. No. 54,354
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **12 Claims**



1. A self scanned photosensitive device comprising:
(a) an array of photosensors;
(b) a shift register having a plurality of phase gates for receiving signals from said photosensors individually:
(c) an array of transfer switches for coupling said photosensors with individual ones of said shift register phase gates to enable signals from said photosensors to be transferred to said shift register phase gates;
(d) counter means for triggering said transfer switches of said switch array in sequence; and
(e) clock means for indexing said shift register to shift signals serially along said shift register from one phase gate to the next, said clock means having a frequency relative to that of said counter means to provide a number of adjoining shift register phase gates equal to the number of phases in said clock means for each photosensor signal.

4,281,255

SOURCE OF ENERGY AND A METHOD OF GENERATING ENERGY

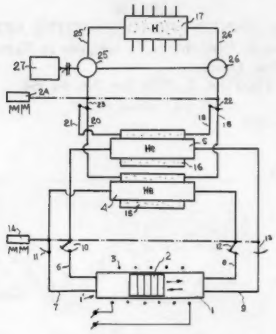
Victor L. Sherman, 115 Logan St., Apt. 2D, Brooklyn, N.Y. 11208

Filed Jul. 3, 1978, Ser. No. 921,850
Int. Cl.³ F25B *25/00;* **H02P** *9/04*
U.S. Cl. 290—1 R **9 Claims**

1. An energy source arrangement, comprising
a mover having a housing;
container means accommodating helium, said container means being so arranged that the helium accommodated therein is heated under the action of surrounding medium, said container means including two containers each having two oppositely located openings;
communicating means communicating said container means with said mover so that the thus-heated helium travels through said communicating means from said container means into said housing of said mover wherein the helium expands and moves said movable element and during this the helium becomes cooled and partially condensed, said communicating means being further arranged so that the thus-cooled and partially condensed helium thereupon travels from said housing of said mover back into said container means without being externally cooled to be

again heated in the latter under the action of the surrounding medium, said communicating means including four conduits each communicating one of said openings of one of said containers with said housing of said mover; and

actuating means operative for actuating said communicating means so that the heated helium is fed from one of said containers through one of its openings into said mover to move said movable element in one direction whereby the



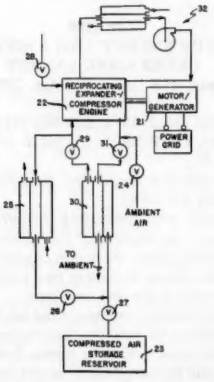
helium is cooled and partially condensed, then the heated helium is fed through another opening from the same container into the housing of said mover so that it moves said movable element in an opposite direction and expels the cooled and partially condensed helium from said mover into one opening of another container wherein the helium is to be again heated to thereafter be fed through another opening of said other container into said housing of said motor.

4,281,256

COMPRESSED AIR ENERGY STORAGE SYSTEM

Frederick W. Ahrens, and George T. Kartsounes, both of Naperville, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 15, 1979, Ser. No. 39,412
Int. Cl.[3] F04B *17/00*
U.S. Cl. 290—1 R **7 Claims**



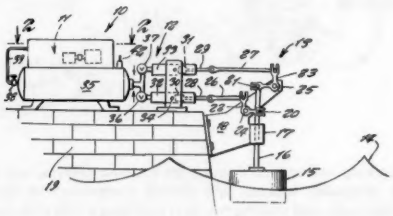
1. A compressed air energy storage system comprising an internal combustion reciprocating engine, an air storage reservoir, means external to said reciprocating engine for operating said reciprocating engine as an air compressor during slack demand periods for power, means for charging the storage reservoir with air compressed by the reciprocating engine, means for feeding air from the storage reservoir and fuel to the reciprocating engine during peak demand periods for power, and means for burning the air/fuel mixture whereupon the engine operates as an expander, developing power available for external use.

4,281,257

WAVE POWERED GENERATOR

Victor Testa, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 29, 1979, Ser. No. 7,464
Int. Cl.[3] F03B *13/12*
U.S. Cl. 290—42 **2 Claims**



1. A machine for converting wave energy to electrical energy comprising a float responsive to wave action causing reciprocating up and down float motion a first means connected to the float along its vertical axis and to parallel rods causing opposing motion of said rods, each said rod connected to a piston mounted in a cylinder which in turn is connected to compressed air tank, including a check valve between each cylinder and said tank in further combination with a second means for operating an electric generator by the compressed air in said tank, wherein the first said means comprise a pair of linkages connected to the float at spaced points, each said linkage attached to each said rod, wherein one of said linkages includes a pivot point secured to a fixed member on one side of said float axis and the other of said linkages includes a pivot point secured to said fixed member at the opposite side of said float axis whereby vertical reciprocal float motion causes opposing rod motion and air compression in at least one cylinder on both up and down float motion.

4,281,258

HIGH SPEED, LOW COMPONENT COUNT, CML EXCLUSIVE NOR GATE

Richard L. Doucette, San Marcos, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 6, 1978, Ser. No. 958,255
Int. Cl.[3] H03K *19/21, 19/082, 19/20*
U.S. Cl. 307—455 **7 Claims**

1. A CML exclusive NOR gate circuit comprising:

a first NPN transistor having a base, a collector and an emitter, said base serving as a first input to said gate,

a second NPN transistor having a base, a collector and an emitter, said base serving as a second input to said gate,

a third NPN transistor having a base, a collector and an emitter, the base of said third transistor being connected to the emitter of said first transistor,

a fourth NPN transistor having a base, a collector and an emitter, the base of said fourth transistor being connected to the emitter of said second transistor,

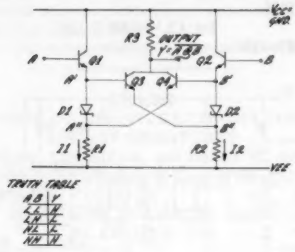
first and second diode means,

said first diode means being coupled between the emitter of the first transistor and the emitter of the fourth transistor,

said second diode means being coupled between the emitter

of the second transistor and the emitter of the third transistor,

means for connecting the emitters of said third and fourth transistors to respective current sources, and for connecting the collectors of said first and second transistors to a reference voltage source,



resistance means,

means connecting the collectors of said third and fourth transistors together and to said reference voltage source through said resistance means, and

means forming an output connected between said resistance means at the collectors of said third and fourth transistors.

4,281,259

DIGITAL PHASE COMPARING APPARATUS

Toshiyuki Ozawa, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

Filed Jul. 5, 1979, Ser. No. 54,974

Claims priority, application Japan, Nov. 8, 1978, 53-139135; Nov. 8, 1978, 53-139136; Feb. 2, 1979, 54-11762; Feb. 2, 1979, 54-11763; Feb. 5, 1979, 54-12472

Int. Cl.[3] **H03K** *5/26;* **H03L** *7/18*

U.S. Cl. 307—514 **24 Claims**

1. An apparatus for comparing the phases of two input signals, comprising:

first and second signal processing circuit means, each including first, second and third input terminals, and first and second output terminals,

each of said first and second signal processing circuit means being structured such that said signal processing circuit means is responsive to a signal obtained at said first input terminal for transferring a signal obtained at said third input terminal to said first and second output terminals in a reversed logical relation and is responsive to a signal obtained at said second input terminal for forcing said first and second output terminals to a logical state determined by said signal obtained at said second input terminal,

first input signal providing means for providing a first input signal the phase of which is to be compared to said first input terminal of said first signal processing circuit means,

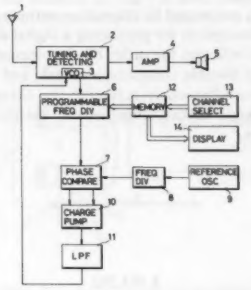
second input signal providing means for providing a second input signal the phase of which is to be compared to said first input terminal of said second signal processing circuit means,

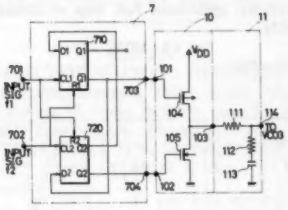
first signal supplying means for supplying the signal obtained at said first input terminal of said first signal processing circuit means to said second input terminal of said second signal processing circuit means,

second signal supplying means for supplying the signal obtained at said first input terminal of said second signal processing circuit means to said second input terminal of said first input processing circuit means,

third signal supplying means for supplying the signal obtained at said first or second output terminal of said first signal processing circuit means to said third input terminal of said second processing circuit means, and

fourth signal supplying means for supplying the signal obtained at said first or second output terminal of said second





signal processing circuit means to said third input terminal of said first signal processing circuit means.

4,281,260

CONTROLLED POWER SUPPLY FOR INTEGRATED CIRCUITS

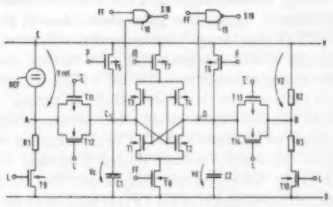
Gerhard Moegen, Neubaldham, and Gottfried Wotruba, Poing, both of Fed. Rep. of Germany, assignors to Eurosil, GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 5, 1978, Ser. No. 948,678

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 27453027

Int. Cl.[3] **H03K** *17/60, 3/01*

U.S. Cl. 307—573 **12 Claims**



1. A circuit that may be formed in integrated CMOS for the control of a supply voltage for integrated circuits by indication of the relation of the supply voltage to a predetermined voltage value characterized by

first and second capacitors,

a constant reference voltage source adapted for connection to charge one of said capacitors and means connecting a supply voltage to charge the other of said capacitors,

a bistable comparison circuit having first and second complementally conductive stages, triggering inputs for said stages and signal outputs from said stages, said first and

second capacitors being connected to said triggering inputs to control the order of complemental conductivity of said stages according to the relative voltage values on said capacitors;

logic means connected to respective outputs of the bistable comparison circuit for producing a digital signal the value of which indicates the order of complemental conductivity of said bistable comparison circuit; and

means for simultaneously actuating the comparison circuit and the logic means subsequent to the charging of said capacitors.

4,281,261

INTEGRATED IGFET CONSTANT CURRENT SOURCE

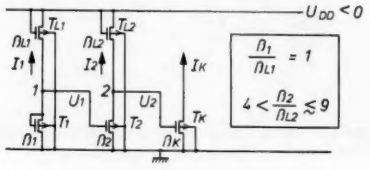
Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 21, 1979, Ser. No. 40,801

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826624

Int. Cl.³ H03K *3/01*

U.S. Cl. 307—270 **4 Claims**



1. A monolithically integrated circuit for an IGFET-constant current source containing a source-drain series arrangement of two IGFET's of one conductivity type in series between the voltage supply and the substrate, in which series arrangement the gate electrode of the first load IGFET of the series arrangement, as applied to the first pole of the voltage supply, is connected to the first pole of the voltage supply, and the common connection point of the two IGFET's is connected to the gate electrode of a current-source IGFET whose source electrode is applied to the substrate, wherein the improvement comprises that:

when using enhancement IGFET's of the same channel conductivity type, the gate electrode of the second IGFET (T_2) of the series arrangement is connected to the common connection point (**1**) of a further source-drain series arrangement of two IGFET's (TL_1, T_1) arranged in series between the first pole and the substrate,

that in the further source-drain series arrangement, the gate electrode of the load-IGFET (T_{L1}) as applied to the first pole of the supply voltage (U_{DD}) is applied to this first pole of the voltage supply (U_{DD}), and that the gate electrode of the second IGFET (T_1) is applied to the common connection point (**1**) thereof, and

that the condition $(\beta_1/\beta_{L1})=1$ is extensively approximated and that the condition $4<\beta_2/\beta_{L2}\leqq 9$ is satisfied.

wherein β_1 indicates the mutual conductance constant of the second IGFET (T_1) of said further series arrangement,

wherein β_{L1} indicates the mutual conductance constant of the load-IGFET of said further series arrangement,

wherein β_2 indicates the mutual conductance constant of the second IGFET (T_2) of the series arrangement, and

wherein β_{L2} indicates the mutual conductance constant of the load-IGFET of the series arrangement.

4,281,262

CIRCUIT ARRANGEMENT FOR EVALUATING PULSE GENERATOR SIGNALS OF VARIOUS AMPLITUDES

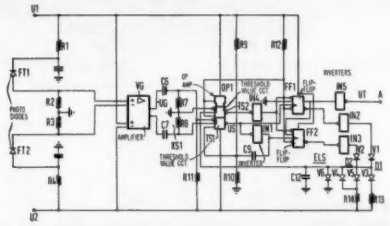
Anton Dressen, Dachau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,635

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827959

Int. Cl.³ H03K *5/153*

U.S. Cl. 307—350 **12 Claims**



1. A circuit arrangement for evaluating pulse signals of different amplitudes and producing output pulses therefrom, comprising:

a first threshold value means for receiving the pulse signals and producing rectangular pulses having pulse widths dependent on the durations of the pulse signals above a first threshold value;

discharge means including a capacitor, connected to said first threshold means and operable in response to the leading edge of a rectangular pulse to discharge said capacitor from an initial value at a first discharge rate and at a second discharge rate which is twice the first discharge rate in response to the trailing edge of a rectangular pulse; and

a second threshold value means connected to said discharge means and operable to produce an output pulse in response to the potential of said capacitor falling below a second threshold value.

4,281,263

HYBRID STATOR AND A TWO-AXIS INDUCTION ELECTRIC MOTOR CONSTRUCTED THEREWITH

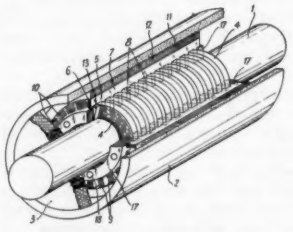
Alain F. Virolleau, Paris; Michel Kant, Thourotte, and Pierre H. Burnier, Longjumeau, all of France, assignors to Gradient, Compiegne, France

Filed May 22, 1979, Ser. No. 41,301

Claims priority, application France, May 23, 1978, 78 15304; Jun. 30, 1978, 78 19613

Int. Cl.³ H02K *7/06*

U.S. Cl. 310—13 **11 Claims**



1. A tubular stator capable of creating a magnetic field having a linear component and a rotary component, comprising:

a tubular magnetic frame divided into longitudinal magnetic elements spaced angularly apart at least peripherally and having a comb-like radial profile whose teeth are directed radially towards the centre,

a tubular winding having circular induction coils which are disposed between the teeth of the longitudinal magnetic elements,

undulating coil bunches disposed longitudinally between the longitudinal magnetic elements and surrounding the circular induction coils, and

a magnetic sleeve surrounding the magnetic frame.

4,281,264

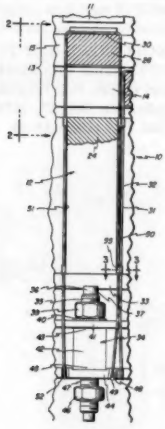
MOUNTING OF ARMATURE CONDUCTORS IN AIR-GAP ARMATURES

Thomas A. Keim, Clifton Park, and Donald W. Jones, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 26, 1979, Ser. No. 14,942

Int. Cl.³ H02K *3/48*

U.S. Cl. 310—194 **14 Claims**



1. In a dynamoelectric machine having a stator core, a rotor rotatable relative to said core about a longitudinal axis of said core and separaed from said core by an air-gap, and a plurality of circumferentially-spaced armature conductors located in said air-gap, the improvement comprising means for securing said armature conductors in said air-gap under continuous radial and circumferential compression, said armature conductors securing means comprising in combination, electrically nonconductive conductor-engaging means, conductor retaining means in contact with said conductor-engaging means, and resilient means for applying a radially-outwardly directed force to said conductor-retaining means, said conductor retaining means means transmitting force from said resilient means to said armature conductors through said conductor-engaging means.

4,281,265

DISC MOTOR WITH A.C. AND D.C. STATOR WINDINGS

John F. Eastham, and Peter D. Evans, both of Bath, England, assignors to KGEL Limited, England

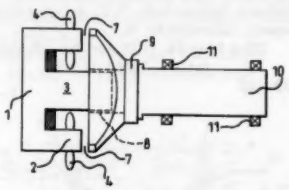
Filed Oct. 16, 1978, Ser. No. 951,602

Claims priority, application United Kingdom, Oct. 17, 1977, 43016/77; Oct. 17, 1977, 43017/77

Int. Cl.³ H02K *1/12*

U.S. Cl. 310—254 **9 Claims**

1. A disc machine comprising a circular stator from which teeth project axially, a central boss projecting from the stator in the same direction as the teeth, an AC winding wound through the slots between the teeth, a DC winding surrounding the central boss, a rotor having polar regions and a central aperture passing entirely therethrough, and means for mounting said rotor for rotation so that the boss passes through the central aperture of the rotor and so that there is an axial gap



between the rotor and the teeth but only a radial gap between the central boss and the rotor through which magnetic flux may flow between the stator and rotor, said mounting means comprising a shaft axially aligned with the central boss on the stator but extending from the rotor away from the stator.

4,281,266

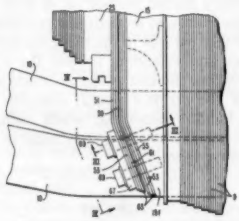
DYNAMOELECTRIC MACHINE WITH FLUX SCREEN

Raymond M. Calfo, Braddock Hills; Arthur Mulach, Penn Hills, and Warren W. Jones, Bullskin, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 14, 1979, Ser. No. 75,452

Int. Cl.³ H02K *1/12*

U.S. Cl. 310—256 **9 Claims**



1. A dynamoelectric machine having a stator and a rotor disposed within said stator with a gap therebetween, said stator comprising:

a plurality of laminations forming a core;

said core laminations have slots disposed to extend radially outwardly from the radially inner margin, said slots being aligned to form axially extending grooves and teeth;

conductors disposed in said grooves and extending axially therein and therebeyond;

finger plates having fingers which extend over said teeth and fit between said conductors for transmitting compressive forces to said core laminations including the teeth;

end plates disposed outboard of said finger plates for transmitting compressive forces to said finger plates; and

flux screens disposed between said end plates and said finger plates;

each of said flux screens being formed of laminations and having digital portions which extend radially inwardly over said fingers of said finger plates, clamping plates disposed over the digital portions, and fastening means for applying a compressive force to the portion of the screen laminations making up the digital portion, the radially inner margins of said flux screen laminations being stepped so as to ascent radially and axially outwardly from the inner margin thereof, whereby the teeth of the core are shielded from fringing flux which would enter the ends of

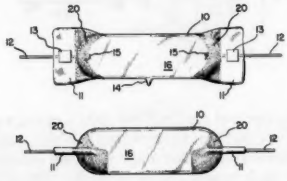
the core generally perpendicular to the plane of the core laminations.

4,281,267

HIGH INTENSITY DISCHARGE LAMP WITH COATING ON ARC DISCHARGE TUBE

Peter D. Johnson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 14, 1979, Ser. No. 38,464
Int. Cl.³ H01J *61/35*
U.S. Cl. 313—25 **6 Claims**



1. In a high intensity arc discharge lamp including an outer envelope and inner, evacuable elongated discharge tube having electrodes disposed through substantially flat pinch-off flanges at opposed ends thereof and containing a discharge medium, one of the ends of each of said electrodes projecting into said medium, the improvement comprising:

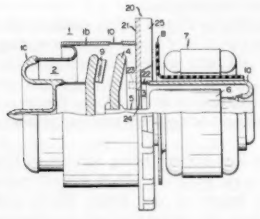
a reflective coating on said discharge tube, said coating being disposed at, and covering the ends of said discharge tube and extending just beyond the ends of said electrodes projecting into said medium except for an approximately semicircularly shaped portion on at least one of said discharge tube ends, said semicircular portion lying in a plane approximately parallel to the plane containing said pinch-off flanges, and extending toward the nearest pinch-off flange to expose the end of the electrode so that a greater portion of the arc is exposed, whereby the amount of escaping light is increased, while sufficient reflective coating is retained to avoid a decrease in the heat reflective operation thereof.

4,281,268

X-RAY TUBE WITH COOLED SHIELD BETWEEN TARGET AND ROTOR

Tsuna Sawa, Fujisawa, and Yashunori Ishii, Chigasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 8, 1979, Ser. No. 1,825
Claims priority, application Japan, Jan. 18, 1978, 53/3795
Int. Cl.³ H01J *35/04*
U.S. Cl. 313—60 **12 Claims**



1. An X-ray tube comprising:

an evacuated envelope including first and second end portions made of glass and an intermediate portion made of metal, said first end portion having a smaller diameter than said intermediate portion;

a cathode unit disposed in said evacuated envelope;

an anode unit disposed in said evacuated envelope and including a target received in said intermediate portion and facing the cathode unit, a rotor disposed in said first end portion and a shaft interconnecting said target and said rotor;

a shielding ring made of a heat conductive material and connected to said intermediate portion at its outer peripheral portion and to said first end portion at its inner peripheral portion, thereby constituting a part of said envelope, the inner periphery of said shielding ring extending between said target and said rotor, thereby protecting said first end portion against electrons emitted from said target; and

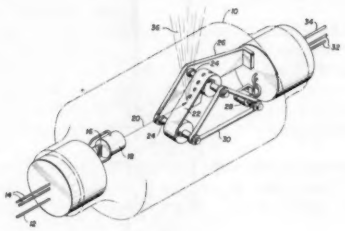
an insulation cylinder including a first section surrounding said first end portion and a second section adjacent to at least a portion of said shielding ring, said first and second sections, said shielding ring and said first end portion defining a region through which a cooling medium may flow to cool said shielding ring and first end portion.

4,281,269

MICROFOCUS X-RAY TUBE

Robert S. Ledley, 1002 Lagrande Rd., Silver Spring, Md. 20903

Continuation-in-part of Ser. No. 791,328, Apr. 27, 1977, abandoned. This application Oct. 23, 1979, Ser. No. 87,374
Int. Cl.³ H01J *35/08*
U.S. Cl. 313—60 **32 Claims**



1. A reusable microfocus X-ray tube adapted to generate a relatively large number of X-rays in a relatively short period of time using a narrowly focused electron beam, said microfocus X-ray tube comprising:

(a) first means for producing a dense, narrow electron beam;

(b) a target anode; and

(c) second means for moving said target anode so that it is stationary during production of X-rays but a fresh portion of the surface of said target anode is presented to the electron beam each time the X-ray tube is used.

4,281,270

PRECOATED RESISTIVE LENS STRUCTURE FOR ELECTRON GUN AND METHOD OF FABRICATION

Benjamin Abeles, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,400
Int. Cl.³ H01J *29/82*
U.S. Cl. 313—444 **11 Claims**

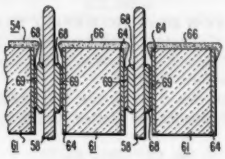
1. An electron gun comprising a plurality of electrodes and a resistive lens structure disposed between two of said electrodes, said lens structure comprising:

(a) a plurality of apertured electrodes, and

(b) a plurality of resistive spacer blocks,

(c) said apertured electrodes and said blocks being alternately stacked together such that each resistive block

provides an electrical resistive connection between the two apertured electrodes on either side thereof,



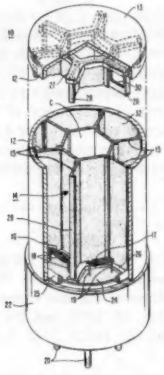
(d) each of said resistive blocks comprising an insulator block having a separate precoated layer of resistive material on a surface thereof.

4,281,271

COMPACT FLUORESCENT LAMP HAVING A PARTITIONED ENVELOPE

Robert G. Young, Nutley, and John F. Gilmore, Verona, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 12, 1979, Ser. No. 47,834
Int. Cl.³ H01J *61/10, 61/33, 61/42*
U.S. Cl. 313—493 **10 Claims**



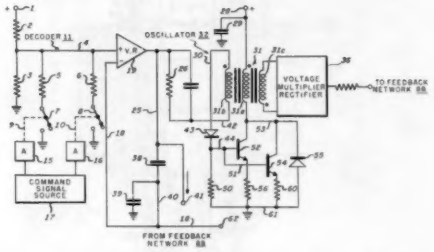
1. A low-pressure electric discharge lamp comprising;
an elongated light-transmitting sealed envelope that contains an ionizable medium and a pair of spaced electrodes,
conductor means extending into said envelope and connected to the respective electrodes, and
an elongated partition assembly within said envelope having a plurality of panel segments that define a continuous discharge channel which extends between the electrodes and substantially traverses the envelope a predetermined number of times in retroverted fashion,
the panel segments of said partition assembly extending longitudinally along and inwardly from the walls of said envelope and being so shaped and arranged that they divide the envelope interior into a plurality of interconnected sectors and also form an elongated centrally-located chamber that is closed to the discharge and constitutes the core of said partition assembly,
the size of the core chamber defined by said partition assembly being correlated with that of the envelope and being such that the maximum cross-sectional dimension of said core chamber at a given location is from about 25% to about 85% of the maximum cross-sectional dimension of the envelope at the same location so that the discharge is displaced outwardly toward the envelope walls as it traverses the respective envelope sectors formed by the panel segments of the partition assembly.

4,281,272

HIGH VOLTAGE SWITCHING POWER SUPPLY FOR PENETRATION CATHODE RAY DISPLAYS

Thomas W. Spilsbury, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,902
Int. Cl.³ H01J *23/34;* **H04N** *9/27*
U.S. Cl. 315—1 **5 Claims**



1. A switching high voltage power supply for supplying a plurality of varible d.c. voltages to the anode of a penetration type color cathode ray tube display apparatus comprising:
selector means for sequentially selecting one of a plurality of predetermined d.c. command signals corresponding to an intial value of said anode voltage to values of decreasing amplitudes dependent upon the colors of the information to be displayed,
voltage regulator means responsive to said command signal and said anode voltage for providing a d.c. error signal,
d.c. to d.c. converter means including blocking oscillator means responsive to said error signal and an energy storing voltage multiplier rectifier means responsive to said blocking oscillator for supplying said d.c. anode voltage corresponding to said initial value,
level detector means responsive to a change of polarity of said error signal, and
means including pull-down switch means responsive to said level detector means for reducing said anode voltage to the value corresponding to said error signal, the energy stored in said voltage multiplying rectifier means substantially reestablishing said initial anode voltage upon completion of said selector means sequence.

4,281,273

SPIN TUNED MAGNETRON HAVING LOAD SHARING BEARING ARRANGEMENTS

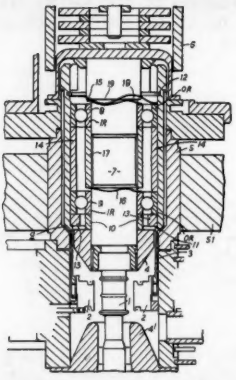
John E. Baker, London, England, assignor to E M I -Varian Limited, Hayes, England

Filed Sep. 27, 1979, Ser. No. 79,255
Claims priority, application United Kingdom, Oct. 3, 1978, 39026/78
Int. Cl.³ H01J *25/50*
U.S. Cl. 315—39.61 **10 Claims**

1. A spin tuned magnetron including:
a spinner assembly having a spinner member;
a shaft member coaxial with the spinner assembly and defining an axis of rotation relative to which the spinner member rotates;
rotor and pole piece bearing arrangements to allow the spinner member to rotate relative to the shaft member, the bearing arrangements being axially spaced apart, each bearing arrangement having an outer race associated with one of the members and an inner race associated with the other of the members;
means retaining the races associated with one of the mem-

bers in fixed positions relative to that member and axially spaced apart relative to each other;

spacing means for maintaining the races associated with the other member in an axial spacing relationship with the said races associated with the said one of the members which is dependent on an axial load acting on the spinner member, the spacing means including first spring means arranged between, and axially urging apart the said races associated



with the other member, and second spring means arranged at a side remote from the first spring means of one of the said races associated with the other member to oppose the said axial load, and

means for adjusting the positions of the said races associated with the other member relative to each other and to that member to preload the spring means and to adjust the end play in the bearing arrangements.

4,281,274

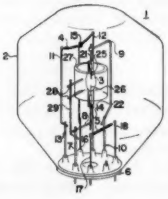
DISCHARGE LAMP HAVING VITREOUS SHIELD

Conrad E. Bechard, Moreland Hills; John M. Davenport, Lyndhurst, and Denis A. Lynch, Jr., South Euclid, all of Ohio, assignors to General Electric Co., Schenectady, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,717

Int. Cl.³ H01J *7/44, 17/34, 19/78;* **H01K** *1/62*

U.S. Cl. 315—49 **9 Claims**



1. A lamp comprising:

an arc tube within an outer glass bulb having inleads sealed thereinto,

said arc tube being made of vitreous material transmissive of ultraviolet radiation and containing a filling of mercury and metal halide including sodium iodide and serving as the main light source in said lamp,

said outer bulb having metal members within it extending from said inleads and supporting said arc tube,

and an enclosure of glass substantially opaque to ultraviolet radiation surrounding said arc tube and open to the atmosphere of said outer bulb, said enclosure being of glass having substantial conductivity at its operating temperature in said lamp and being connected to a point maintained at a potential which on average is positive relative to said arc tube.

4,281,275

CIRCUIT FOR DRIVING DEFLECTION COIL

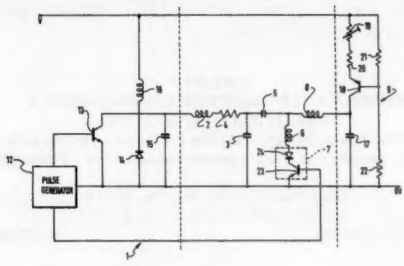
Peter Chapman, Gillingham, and Martin W. Redfern, Maidstone, both of England, assignors to Elliott Brothers (London) Limited, Chelmsford, England

Filed Sep. 7, 1979, Ser. No. 73,520

Claims priority, application United Kingdom, Sep. 12, 1978, 36515/78

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—399 **7 Claims**



1. A circuit for driving a deflection coil comprising: a capacitor forming a series L-C circuit with the deflection coil; a drive circuit to produce a current of sawtooth waveform through the series L-C circuit; and a switchable resonant circuit connected across the capacitor of the said series L-C circuit to produce across said capacitor a saw-tooth waveform voltage component which is substantially equal and opposite to the voltage drop attributable to a resistive component of the L-C circuit.

4,281,276

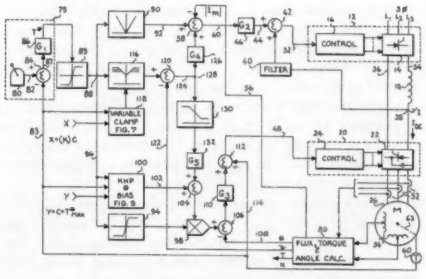
DUAL MODE AC MOTOR DRIVE SYSTEM

John H. Cutler, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,937

Int. Cl.³ H02P *7/42, 7/58*

U.S. Cl. 318—803 **18 Claims**



1. A system for providing control of an AC electric motor having a stator and a rotor spaced from the stator by a gap across which flux is produced in response to an electrical motor current of variable magnitude and frequency supplied from a controlled source, said control being a function of both torque command and motor speed, and comprising:

(a) means to determine with respect to the motor the instantaneous motor current and the instantaneous angle be-

tween the gap flux and said motor current and to provide signals proportional thereto;

(b) means to establish a torque reference signal proportional to a desired level of electrical torque;

(c) means to compare said torque reference signal with said signal proportional to the motor current and to generate a first error signal representative of any differences therebetween, said first error signal being coupled to said controlled source to vary the magnitude of the motor current supplied from said source;

(d) means responsive to motor speed and said torque reference signal to derive an angle reference signal representative of the desired angle between the gap flux and motor current for first and second operational modes, said first operational mode being at speeds less than a predetermined reference speed wherein said angle reference signal is of a substantially constant angle value, and said second operational mode being at speeds greater than said predetermined reference speed wherein said angle reference signal is of a variable angle value; and

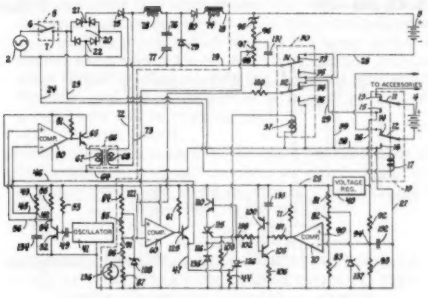
(e) means to compare said angle reference signal with said signal proportional to the instantaneous angle between the gap flux and the motor current to generate a second error signal representative of a difference therebetween, said second error signal being coupled to said controlled source to vary the frequency of the motor current supplied thereto from said source.

4,281,277

DUAL SECONDARY CELL CHARGING SYSTEM

Leroy E. Lakey, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1979, Ser. No. 65,566
Int. Cl.³ H02J *7/14, 7/32*
U.S. Cl. 320—6 **5 Claims**



1. A dual secondary cell charging system for charging a separable series of secondary cells that is adapted for the application of a supply potential thereto comprising:

means for producing a direct current charge potential, said means being of the type that may be selectively disabled;

means responsive to the application of said supply potential for effecting the connection of all of said separable series of secondary cells in series across said charge potential;

means responsive to the charge potential level upon a portion of said separable series of secondary cells attaining a predetermined magnitude for effecting the disconnection of only said portion of said separable series of secondary cells from said charge potential; and

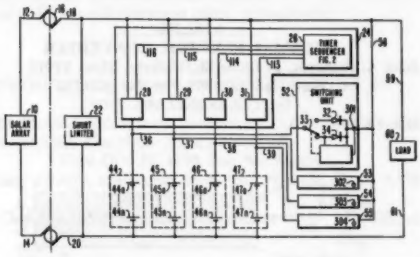
means responsive to the charge potential level upon the remainder of said separable series of secondary cells attaining a first predetermined magnitude for effecting the reconnection of all of said separable series of secondary cells in series across said charge potential and to the charge potential level upon all of said separable series of seondary cells in series attaining a second higher predetermined magnitude for effecting the disabling of said means for producing said charge potential.

4,281,278

REDUNDANT BATTERY PROTECTION SYSTEM

Herbert W. Bilsky, Lawrenceville, N.J., and Patrick J. Callen, Yardley, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,454
Int. Cl.³ H02J *7/10;* **H01L** *31/00*
U.S. Cl. 320—13 **4 Claims**



1. A system for coupling a battery to a load, comprising:

first and second unidirectionally conducting devices, each connected at one like terminal to the load, and each having a second terminal;

controllable switch means normally connecting said battery to the second terminal of said first device for causing a flow of current therethrough to said load, thereby normally producing a voltage drop in the forward direction across said first device;

sensing means for sensing (a) the current flow between said battery and said load and (b) the voltage across said first device; and

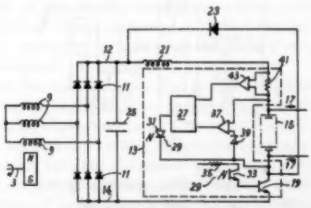
means coupled to said sensing means responsive to the presence of said current flow between said battery and said load and the substantial absence of a forward voltage drop across said first device for operating said controllable switch means causing it to switch the connection of the battery from the second terminal of the first device to the second terminal of the second device.

4,281,279

CHOPPER-CONTROLLED ALTERNATOR FOR BATTERY CHARGING

David Gurwicz, Gateshead, England, assignor to NADA Electronics Limited, Tyne & Wear, England

Filed Jan. 24, 1979, Ser. No. 6,237
Claims priority, application United Kingdom, Jan. 24, 1978, 2865/78; Jan. 4, 1979, 212/79
Int. Cl.³ H02J *7/04*
U.S. Cl. 320—45 **6 Claims**



1. An alternator for an internal combustion engine driven

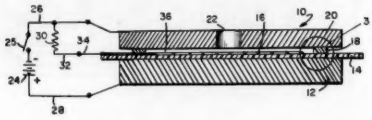
vehicle, comprising a permanent magnet rotor adapted to be mounted for rotation with a vehicle engine crankshaft, a wound stator within which the rotor extends, rectifier means connected to the output of the stator and adapted to convert the stator output to DC, a pulse controlled DC chopper regulator connected at the input thereof to the DC output of the rectifier means and adapted to control the output from the rectifier and to supply said controlled output to the vehicle battery for charging thereof, and means for regulating the mark/space ratio of the DC chopper in dependence upon the required charging rate of the battery.

4,281,280

THERMAL ELECTRIC CONVERTER

John A. Richards, 37 Stone St., Beverly, Mass. 01915

Filed Dec. 18, 1978, Ser. No. 970,212
Int. Cl.[3] H02N *21/00, 7/00*
U.S. Cl. 322—2 R **36 Claims**



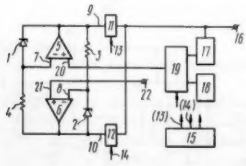
1. A thermal electric converter comprising a conducting member, a non-porous dielectric barrier layer mounted at least proximate said member; a first electrode positioned at least proximate said layer on the reverse side thereof; an enclosure member of non-conducting material mounted on said layer at least partially enclosing said first electrode and defining a cavity with said layer; a second electrode mounted in spaced proximity with said first electrode and said barrier layer, which second electrode extends at least partially across said enclosure member to at least partially close said cavity; means for connecting said second electrode and said first electrode through external circuitry; means to introduce and maintain gas in said cavity at a desired pressure; means to apply a DC voltage across said conducting member and said electrodes and means to apply heat to said conducting member to cause current to flow from said second electrode to said first electrode through said external circuitry.

4,281,281

REFERENCE VOLTAGE SOURCE

Toom A. Pungas, bulvar Sypruse, 219, kv. 3; Toomas E. Parve, bulvar Ryannaku, 3, kv. 7, and Mart V. Min, ulitsa Ladva, 26, all of Tallin, U.S.S.R.

Filed Oct. 16, 1978, Ser. No. 951,508
Claims priority, application U.S.S.R., Apr. 27, 1978, 2590404
Int. Cl.[3] G05F *1/40*
U.S. Cl. 323—271 **16 Claims**



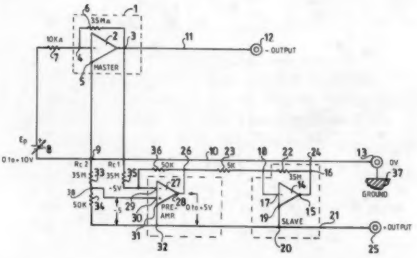
1. A reference voltage source, comprising
an input terminal and an output terminal;
means for applying a control voltage to said input terminal;
a bridge circuit having a first pair of opposite arms, a second pair of opposite arms, two avalanche diodes connected in the first pair of opposite arms and two resistors connected in the second pair of opposite arms;
a first operational amplifier having an inverting input, a non-inverting input and an output, the inverting input of said first operational amplifier being connected to the anode of said first avalanche diode and the output of said first operational amplifier being connected to the cathode of said first avalanche diode;
a second operational amplifier having an inverting input, a non-inverting input and an output, the inverting input of said second operational amplifier being connected to the cathode of said second avalanche diode, the non-inverting input of said second operational amplifier being connected to said input terminal of said source, and the output of said second operational amplifier being connected to the anode of said second avalanche diode, the outputs of said first and second operational amplifiers being alternately connected to said output terminal of said source;
an AC-DC voltage converter having an input connected to said output terminal and an output;
a DC voltage setting circuit having an output;
a comparator having a first input connected to the output of said converter and a second input connected to the output of said DC voltage setting circuit and an output connected to the non-inverting input of said first operational amplifier.

4,281,282

HIGH POSITIVE AND NEGATIVE VOLTAGES PROGRAMMED BY A LOW VOLTAGE RETURNED TO COMMON

Sarkis Nercessian, Flushing, N.Y., assignor to Kepco, Inc., Flushing, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,094
Int. Cl.[3] G05F *1/10*
U.S. Cl. 323—350 **7 Claims**

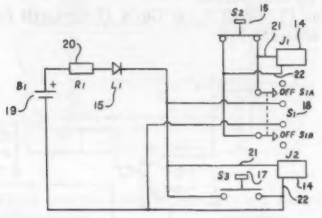


1. In a master/slave power supply configuration, the combination of;
a pair of high voltage programmable power supplies of like output polarity;
a common line;
one of said power supplies connected between said common line and an output line of predetermined polarity;
a source of programming voltage connected between said common line and the programming input of the latter said power supply for programming the voltage on said output line;
the second of said power supplies connected between said common line and a second output line of opposite polarity to said predetermined polarity;
and an inverting preamplifier coupled between said first output line and the programming input of said second power supply;
whereby said second output line is programmed in accordance with the magnitude of the voltage on the first said output line and of opposite polarity.

4,281,283
AUDIO CABLE TESTER

Joseph H. Ross, 1719 San Jose Ave., Alameda, Calif. 94501; Richard J. Hall, 365 Pearl St., Livermore, Calif. 94550

Filed Mar. 14, 1979, Ser. No. 20,537
Int. Cl.[3] G01R *31/02*
U.S. Cl. 324—51 1 Claim

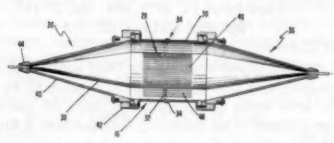


1. A portable audio cable tester comprising:
- a plastic electrical housing defining a box having a length of about 5 inches, a width of about 4 inches and a height of about 3 inches, the box having a removable top secured thereto by cornered screws;
- two jacks located on top of the box for connecting with the to-be-tested cables;
- a signal light located on top of the box midway between and below the locality of the two jacks;
- a resistor connected with the signal light;
- a push-button "short" switch in normally closed position located below one of the jacks and connected thereto such that when pressed the switch will open the circuit of the cable to be tested;
- a push-button "check" switch in normally open position located below the second jack and connected to bypass both jacks such that when pressed the switch can activate the signal light to indicate that the tester circuit is in order;
- a three position toggle switch located in a lower corner of the box and connected in normally open position such that when flipped in a first position the conductor wire will be bypassed and when flipped in a second position the ground wire will be bypassed; and
- a small nine volt battery,
- whereby with a minimum of adjustments, an audio cable can be quickly and inexpensively tested for short circuit, open conductor, and open shield element of the ground wire.

4,281,284
METHOD AND APPARATUS FOR ELECTRICALLY CONTACTING A MATERIAL SPECIMEN TO THE CONDUCTORS OF A COAXIAL CABLE

David E. Stutz; Thomas Atterbury, and William F. Scharenberg, Jr., all of Columbus, Ohio, assignors to Transmet Corporation, Columbus, Ohio

Filed Nov. 26, 1979, Ser. No. 97,890
Int. Cl.[3] G01R *27/04*
U.S. Cl. 324—58 A 12 Claims

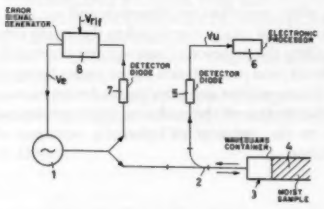


1. Apparatus for holding a specimen of material in electrical contact with the conductors of a coaxial electrical cable, comprising:
- a first tubular conductor having a pair of longitudinal slots establishing a radially flexible strip in the wall of said first conductor, to thereby enable said first conductor to establish electrical contact with the inner surface of an annular specimen;
- a second tubular conductor larger in diameter than said first conductor and coaxial therewith, said second conductor having a pair of longitudinal slots establishing a radially flexible strip in the wall of said second conductor, to thereby enable said second conductor to establish electrical contact with the peripheral surface of an annular specimen; and
- means for providing electrical connection between said first and second conductors and the inner and outer conductors of a coaxial electrical cable, respectively.

4,281,285
INSTRUMENT FOR MEASURING MOISTURE IN MATERIALS

Ezio M. Bastida, Milan, Italy, assignor to C.I.S.E. Centro Informazioni Studi Esperienze S.p.A., Italy

Filed Oct. 29, 1979, Ser. No. 88,976
Claims priority, application Italy, Oct. 31, 1978, 29327 A/78
Int. Cl.[3] G01R *27/04*
U.S. Cl. 324—58.5 B 4 Claims



1. An instrument for measuring moisture in materials, comprising a constant amplitude microwave signal generator, a waveguide container for a sample of moist material to be examined, a microwave signal ampliutde detector and a directional coupler of high directivity disposed between said generator, said container and said detector to transmit to the container the constant amplitude microwave signal generated by the generator and to transmit to the detector the microwave signal which is reflected by the sample container in the container, and of which the amplitude varies with the humidity.

4,281,286
APPARATUS AND METHOD FOR DETECTING WET AND ICY CONDITIONS ON THE SURFACE OF A PATHWAY

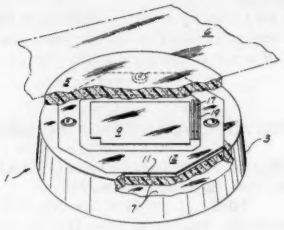
Donald E. Briggs, St. Louis County, Mo., assignor to Surface Systems, Inc., St. Louis County, Mo.

Filed Nov. 15, 1979, Ser. No. 94,556
Int. Cl.[3] G01R *27/26*
U.S. Cl. 324—61 R 25 Claims

1. Apparatus for detecting wet and icy conditions on the surface of a pathway, comprising:
- a block of electrically insulative material adapted to be embedded in the pathway with the top surface of the block substantially flush with the surface of the pathway and exposed to atmospheric precipitation;
- a sensor electrode encapsulated in said block and positioned a predetermined distance beneath the top surface of the block so that an accumulation of atmospheric precipitation on said top surface affects the capacitance and conductance between the sensor electrode and the pathway;
- means for detecting the presence of predetermined concentrations of impurities such as salt or the like on the top surface of the block;
- means for supplying a time-varying electrical current to the sensor electrode at at least two different predetermined

frequencies, the apparatus being relatively sensitive to impurities on the surface of the block at one of the predetermined frequencies and being relatively insensitive to said impurities at the second predetermined frequency;

means, responsive to the detecting means, for controlling the current supplying means to supply electrical current to the sensor electrode at the one predetermined frequency when substantially pure precipitation is present on the top



surface of the block and at the other predetermined frequency when impurities are detected; and

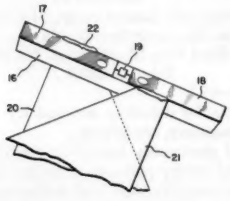
precipitation signal means connected to the sensor electrode for signalling the presence of atmospheric precipitation on the pathway, said precipitation signal means being responsive to the capacitive and conductive losses between the sensor electrode and the pathway when precipitation is present on the pathway to signal the presence of said precipitation.

4,281,287

MAGNETIC TAPE LEADS FOR PROBES IN ELECTROMAGNETIC RADIATION

Charles L. Andrews, Albany, N.Y., and Lorne H. Belden, Jr., Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,179
Int. Cl.³ G01R *21/04, 19/22, 33/02*
U.S. Cl. 324—95 **5 Claims**



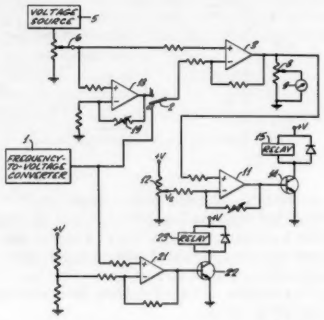
1. A uniquely electric probe for detecting the electric field component of electromagnetic radiation comprising: a dipole antenna and associated diode detector for generating a potential difference related to the magnitude of the electric field, and a pair of leads connected across said detector to transmit the potential difference to utilization circuitry, said leads being electrically conductive flexible magnetic tape that has a high resistance per unit length and is minimally perturbing to the electromagnetic waves and is comprised of an insulating substrate having a coating of contacting γ-Fe_2O_3 particles.

4,281,288

APPARATUS FOR THE MEASUREMENT OF THE MECHANICAL OUTPUT OF INDUCTION MOTORS

Kaichi Izumi, Tokyo, Japan, assignor to Kao Soap Company Limited, Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,261
Claims priority, application Japan, Jul. 21, 1978, 53-89162; Nov. 30, 1978, 53-148182
Int. Cl.³ G01R *31/00;* **G01N** *11/02;* **G01R** *1/38*
U.S. Cl. 324—158 MG **9 Claims**



1. An apparatus for measuring and/or supervising the output of an induction motor comprising:

means for generating a first voltage signal (S) corresponding to the synchronous speed of said motor;

means for generating a second voltage signal (H) proportional to the rotary speed of said motor at rated maximum output;

means for generating a third voltage signal (Ha) proportional to the rotary speed of said motor in operation;

circuit means responsive to said first voltage signal and either said second or third voltage signals for generating voltage signals proportional to S-H or S-Ha;

means for switching the second voltage signal or the third voltage signal to said circuit means;

indicator means responsive to the output of said circuit means; and

means operative when the first voltage signal and the second voltage signal are applied to said circuit means for adjusting the full scale indication of said indicator means, said switching means thereafter enabling the application of the third voltage signal to said circuit means so that said indicator means indicates S-Ha.

4,281,289

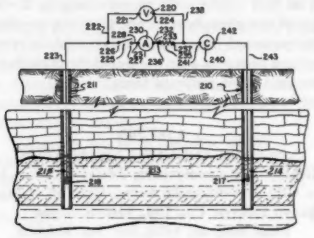
METHOD OF DETERMINING INTERWELL OIL FIELD FLUID SATURATION DISTRIBUTION

Erle C. Donaldson, and F. Dexter Sutterfield, both of Bartlesville, Okla., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 16, 1979, Ser. No. 21,141
Int. Cl.³ G01V *3/02, 3/20*
U.S. Cl. 324—355 **8 Claims**

1. A method of determining the fluid saturation distribution in an oil and brine bearing formation penetrated by a plurality of open hole wells comprising the steps of: introducing an effective amount of an oxidizing solution into a first well and an effective amount of a reducing solution into a second well, introducing an electrode into the first well in contact with the oxidizing solution therein, introducing an electrode into the second well in contact with the reducing solution therein, interconnecting said first and second electrodes with an electrical conductor, measuring the current between the electrodes generated solely by the solutions in the first and second wells,

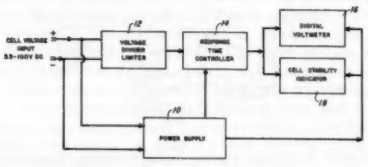
calculating the apparent resistivity of the oil and brine bearing formation from the electrical current measurements, and determining the fluid saturation distribution between wells from the resistivity calculations.



4,281,290
VOLTAGE MONITOR

John G. Peacey, Pointe Claire, Canada; Ralph R. Ebersole, Sikeston, Mo.; Frank Kitzinger, Montreal, and Jean-Claude Viens, Dollard-des-Ormeaux, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Feb. 27, 1979, Ser. No. 15,593
Int. Cl.³ G01N 27/42
U.S. Cl. 324—426 9 Claims



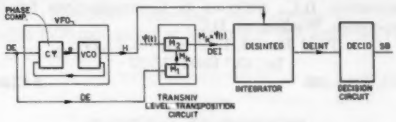
1. A voltage monitor comprising:
(a) a digital voltmeter for displaying a measured input voltage;
(b) means for converting the varying input voltage of the monitor into a stabilized power supply voltage for the operation of the digital voltmeter; and
(c) response time controller means for applying said input voltage to said digital voltmeter, said response time controller means providing a long time constant averaging value of input voltage to the digital voltmeter when the input voltage is within a predetermined range about a normal value, and providing a faster response to input voltage values when the input voltage exceeds its normal value.

4,281,291
ARRANGEMENT FOR DETECTING THE BINARY VALUES OF BIT CELLS HAVING CENTER TRANSITIONS SUBJECT TO PHASE DISTORTION

Jean-Claude Lamare, Ezanville, and Christian Maury, Velizy, both of France, assignors to Compagnie Internationale pour l'Informatique-CII Honeywell Bull, Paris, France

Filed Nov. 29, 1978, Ser. No. 964,724
Claims priority, application France, Dec. 12, 1977, 77 37290
Int. Cl.³ H03K 9/00; G11B 5/06
U.S. Cl. 329—50 10 Claims

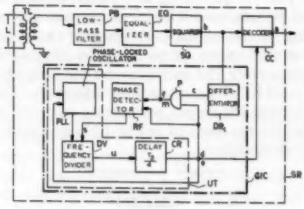
1. Apparatus for detecting data in the form of a sequence of electrical signals of frequency F_0, comprising a clock circuit responsive to and synchronized by the sequence for deriving a clock signal H of frequency F_0, a level transposing device responsive to the sequence and a timing signal synchronized with signal H for deriving a bilevel signal DEI, an integrating apparatus responsive to signal DEI for deriving signal DEINT, a decision circuit responsive to signal DEINT for determining the polarity of signal DEINT and deriving binary data bits having values that are a function of the polarity, said integrating apparatus including at least one integrator having a capacitive integrating member, a device responsive to signal DEI for controlling the direction and duration of charging current supplied to the capacitive member as a function of the polarity and duration of each of the levels of signal DEI, a circuit for resetting the integrator to zero at the end of the integrating operation for each level of signal DEI, and a generator for supplying the capacitive integrating member with a charging currnet proportional to frequency F_0.



4,281,292
SAMPLING SYSTEM FOR DECODING BIPHASE-CODED DATA MESSAGES

Riccardo Caldarella, and Riccardo Nobile, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jul. 27, 1979, Ser. No. 61,480
Claims priority, application Italy, Jul. 28, 1978, 26237 A/78
Int. Cl.³ H03K 9/00
U.S. Cl. 329—50 8 Claims



1. In a receiver for a biphase-coded carrier wave of predetermined frequency undergoing a phase reversal in the middle of each cycle thereof and also at the beginning of certain cycles according to the logical value of corresponding bits of a binary message conveyed thereby, in combination:
input means connected to a transmission line over which said carrier wave arrives from a remote station;
decoding means connected to said input means for sampling said carrier wave once per cycle to reconstruct said binary message; and
circuitry for producing a sequence of timing pulses recurring at said predetermined frequency and controlling the sampling of said carrier wave in said decoding means, said circuitry comprising differentiation means connected to said input means for deriving á spike from said carrier wave upon each phase reversal thereof, timing means controlled by said differentiation means for producing a local square wave of said predetermined frequency in substantial quadrature with said carrier wave, gating means with inputs respectively connected to said differentiation means and to said timing means for blocking the transmission of said spikes during a fraction of each cycle equal to substantially half a cycle, and phase-detecting means with inputs connected to said gating means and to said timing means for emitting an error pulse in response to a discontinuity in the succession of spikes passed by said

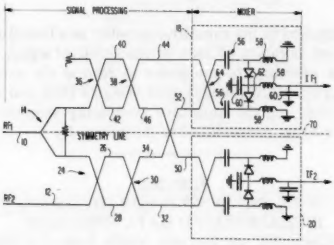
gating means, said timing means having a switching input connected to said phase-detecting means for reversing the phase of said square wave in response to said error pulse.

4,281,293

PLANAR QPSK DEMODULATOR

William H. Childs, Gaithersburg, Md., and Christoph E. Mahle, Washington, D.C., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Jun. 22, 1979, Ser. No. 51,297
Int. Cl.³ H04L 27/22
U.S. Cl. 329—105 **5 Claims**



1. A QPSK demodulator of the type having RF_1 and RF_2 input ports for receiving RF_1 and RF_2 input signals respectively, and IF_1 and IF_2 output ports for providing IF_1 and IF_2 output signals, respectively, power dividing means connected to said RF_1 input port and supplying a RF_1 input signal to each of first and second mixers, coupling means coupled to said RF_2 input port for providing RF_2 inputs to each of said first and second mixers, said RF_2 inputs to said first and second mixers being 90° out-of-phase with respect to one another, said first and second mixers providing said IF_1 and IF_2 output signals, respectively, the improvement comprising:

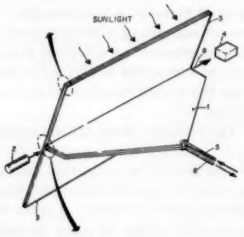
said RF_1 and RF_2 input ports being adjacent one another and said IF_1 and IF_2 output ports being adjacent one another without the necessity of any IF-RF signal path crossovers in said demodulator.

4,281,294

DIRECT SOLAR PUMPED LASER

Howard C. Volkin, 405 Cheryl, Los Alamos, N. Mex. 87544

Filed Apr. 16, 1979, Ser. No. 30,008
Int. Cl.³ H01S 3/20
U.S. Cl. 331—94.5 L **10 Claims**



1. A direct solar-pumped laser having a power output and comprising in combination:

(a) means for collecting and concentrating solar energy into a laser medium, said medium consisting of an active heavy-atom substituted dye molecule in solution, the said solar laser operation occurring on the phosphorescence transition of the active dye molecule,

(b) said active dye molecule having an intersystem crossing rate from its first excited singlet electronic state and a phosphorescence band intensity maximum that are enhanced over that of an unsubstituted dye molecule, and having relatively little triplet-triplet absorption occurring from its first triplet state at wavelengths in the spectral region of the phosphorescence intensity maximum, and

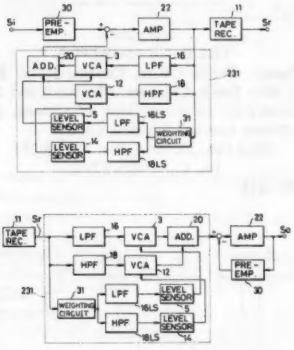
(c) a low-powered input laser at a desired frequency whose laser beam provides a driver signal for amplifier operation of the said solar-pumped laser.

4,281,295

NOISE REDUCING APPARATUS

Satoshi Nishimura, Kagamigahara; Tetsuo Shimizu, Gifu; Kenichi Sato, Gifu, and Takehiko Asano, Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 30, 1978, Ser. No. 938,009
Claims priority, application Japan, Sep. 2, 1977, 52-106441
Int. Cl.³ H04B 1/64
U.S. Cl. 333—14 **15 Claims**



1. A split frequency region noise reducing apparatus employing compression and expansion of a signal comprising:

compressor means and expander means,

one of said compressor and expander means having first signal processing circuit means for receiving said signal and for producing a modified signal corresponding thereto, the other of said compressor and expander means having second signal processing circuit means for receiving said modified signal, each of said first and second signal processing circuit means having substantially the same compression or expansion characteristic for respectively compressing or expanding the dynamic range of the signal applied thereto and each comprising,

first and second filter means for respectively selecting a high frequency region portion and a low frequency region portion of the signal applied to said signal processing means,

a respective controlled variable gain amplifier coupled to the output of each of said first and second filter means receiving the frequency region portion of the signal selected thereby,

third and fourth filter means also for respectively selecting a high frequency region portion and a low frequency region portion of the signal applied to said signal processing means,

a respective level detecting means having an input coupled to the output of each of said third and fourth filter means for producing an output control signal in response to the selected high or low frequency region portion applied thereto, said level detecting means output signal being coupled to the controlled variable gain amplifier means which receives the corresponding higher or lower frequency region of the signal applied to the processing means, and

adding means for adding the outputs of the controlled variable gain amplifier means.

4,281,296

ELECTRICAL FILTER CIRCUIT UTILIZING CHARGE TRANSFER DEVICES FORMED AS LOOPED CIRCUITS

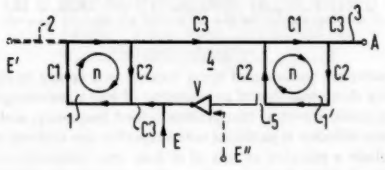
Hermann Betzl; Ernst Hebenstreit, both of Munich, and Roland Schreiber, Ottobrunn-Riemerling, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1979, Ser. No. 60,194

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832795

Int. Cl.³ H03H *17/02;* **G11C** *27/00*

U.S. Cl. 333—165 **4 Claims**



1. A filter circuit comprising a first end four-terminal resonator (**1**) comprising a charge transfer device having n individual elements with its output connected to its input to form a self-contained closed loop, a second end four terminal resonator (**1'**) comprising a charge transfer device having n individual elements with its output connected to its input to form a self-contained closed loop, a coupling circuit (**4**) formed of a pair of charge transfer device line sections having the transfer capacitance of C3 interconnecting and forming first and second longitudinal lines between said first and second end resonators, an output terminal (A), an output charge transfer device line (**3**) connected between said output terminal (A) and said second end four terminal resonator (**1'**), and an input terminal (E) connected to said first end four terminal resonator (**1**) through said second longitudinal line of said coupling circuit (**4**) and supplying an input (E) thereto.

4,281,297

ELECTRICAL FILTER CIRCUIT UTILIZING CHARGE TRANSFER DELAY LINES UTILIZING INDIVIDUAL CHARGE TRANSFER DELAY ELEMENTS

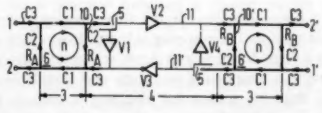
Hermann Betzl; Ernst Hebenstreit, both of Munich, and Roland Schreiber, Ottobrunn-Riemerling, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1979, Ser. No. 60,195

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832849

Int. Cl.³ H03H *17/02;* **G11C** *27/00*

U.S. Cl. 333—165 **3 Claims**



1. An electrical filter circuit comprising CTD-lines consisting of individual CTD-elements formed as four-terminal resonators, each of which are designed as closed looped circuits, and which determine the frequency-dependent transmission behaviour of the filter circuit, and wherein successive four-terminal resonators are interconnected with a coupling circuit, characterized in that there are parallel-connected, with the input and/or output of the individual four-terminal resonator (**6, 6'**), amplifiers (**V1, V4**) which have signal flow directions in a first direction, CTD-lines (**10, 10'**) connected in parallel with said amplifiers (**V1, V4**) to pass current in said first direction, and that series lines (**11, 11'**) of the coupling circuit (**4**) which connect successive four-terminal resonators (**6, 6'**) have unidirectional transmission behaviour, and including an inverting amplifier (**V3**) mounted in at least one of said series lines (e.g. **11'**). (FIG. **2**).

4,281,298

FLEXURAL TRANSDUCER

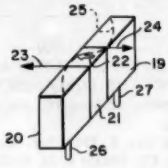
Takashi Gounji, Kawasaki, and Yoshihiko Kasai, Yokahama, both of Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 13, 1979, Ser. No. 93,208

Claims priority, application Japan, Oct. 13, 1978, 53-138813; Dec. 27, 1978, 53-159980; Oct. 16, 1979, 54-133356

Int. Cl.³ H03H *9/125, 9/50, 9/54;* **H01L** *41/18*

U.S. Cl. 333—186 **23 Claims**



1. A flexural electromechanical transducer of elongated configuration comprising:

(a) at least one constant-modulus alloy plate;

(b) a piezoelectric ceramic plate mechanically coupled to said at least one constant-modulus alloy plate and having a residual polarization in one direction and surfaces parallel to the polarization direction; and

(c) lead means electrically connected to said piezoelectric ceramic plate surfaces parallel to the polarization direction for applying a specified frequency signal to said parallel surfaces and obtaining a thickness-shear vibration mode of said piezoelectric ceramic plate and flexural vibration of said transducer.

4,281,299

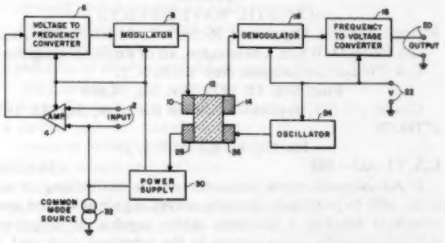
SIGNAL ISOLATOR

William F. Newbold, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 23, 1979, Ser. No. 96,895

Int. Cl.³ H03H *9/00, 9/13;* **H04R** *17/00;* **H01L** *41/04*

U.S. Cl. 333—187 **8 Claims**



1. A signal isolator circuit comprising:

an acoustic medium having electrical insulation properties and acoutsic transmission properties,

a first acoustic transducer on said acoustic medium,

input means for applying an input signal to the isolator circuit to energize said first acoustic transducer to produce corresponding acoustic signals in said medium,

a second acoustic transducer on said medium arranged to receive acoustic signals from at least said first transducer and to produce electrical output signals representative thereof,

output means for receiving output signals from said second transducer and for responding to said output signals representative of acoustic signals from said first transducer,

a third acoustic transducer located on said acoustic medium,

power signal means for energizing said third transducer to produce corresponding acoustic signals in said medium,

a fourth acoustic transducer located on said acoustic medium and arranged to receive acoustic signals from at least said third transducer and to produce electrical output signals representative thereof,

power supply means connected to said fourth transducer and arranged to develop power supply signals for said input means in response to said output signals from said fourth transducer representative of acoustic signals from said third transducer.

4,281,300

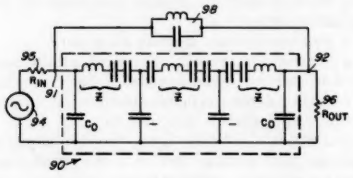
MULTI-POLE CRYSTAL FILTER AND METHOD OF IMPROVING THE FREQUENCY RESPONSE

Aristotelis S. Arvanitis, Addison, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 8, 1979, Ser. No. 92,788

Int. Cl.³ H03H *9/56, 9/58, 9/60*

U.S. Cl. 333—192 **13 Claims**



1. A crystal filter comprising:

(a) an acoustically coupled crystal with three resonators formed thereon;

(b) connecting means associated with said crystal and defining an input and an output, said connecting means further connecting the three resonators so that the phase relationship of the input and the output are the same; and

(c) a parallel tuned circuit connected from the input to the output and constructed to provide an attenuation zero symmetrically located about a desired center frequency.

4,281,301

ACOUSTIC WAVE DEVICES

Richard Stevens, Copthorne; Richard F. Mitchell, Merstham, and Philip D. White, Chessington, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

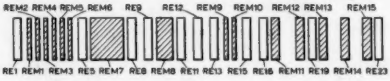
Filed Sep. 12, 1979, Ser. No. 74,694

Claims priority, application United Kingdom, Sep. 22, 1978, 37798/78

Int. Cl.³ H03H *9/64, 9/25*

U.S. Cl. 333—195 **16 Claims**

1. An acoustic wave resonator device comprising, a substrate able to propagate acoustic waves, a pair of spaced apart reflectors forming a resonant cavity capable of supporting acoustic standing wave energy in the substrate, each said reflector comprising an array of parallel reflective elements disposed one behind another at a surface of said substrate, at least one of the reflectors being modified with respect to a nominal uniform array of equal reflectivity equally spaced reflective elements, the reflectivity-frequency characteristic of the uniform array having a main lobe and side lobes centred on a predetermined frequency and the reflectivity-frequency characteristic of said at least one modified reflector having a passband substantially similar to said main lobe and a stopband suppressed compared with said side lobes, and a transducer including an array of electrodes disposed at said substrate surface for coupling with acoustic standing wave energy in the cavity, characterized in that each of the reflective elements of said nominal uniform array comprise a discontinuity formed as a strip at said substrate surface, said strips each being a quarter wavelength wide and having the same depth and length and being centred on the same line of acoustic wave propagation at


REM2 REM4 REM5 REM6 RE9 RE12 REM9 REM10 REM12 REM13 REM15
RE1 REM1 REM3 RE5 REM7 RE8 REM8 RE11 RE13 RE15 RE16 REM11 RE19 REM14 RE23

said substrate surface and being located at a centre to centre spacing along said line of propagation of half a wavelength of said acoustic waves at said predetermined frequency, and that said one reflector is modified with respect to the uniform array to include a plurality of sets of at least one consecutive strip which substitute for an equal number of similarly positioned sets of at least one consecutive strip of the uniform array, the depth and length of the substituting strips being the same as that of the strips of the uniform array and the number, width and location along said line of propagation of the at least one strip of each substituting set being such that each substituting set provides net-zero reflection of said acoustic waves at said predetermined frequency.

4,281,302

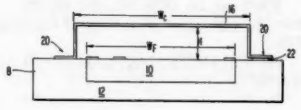
QUASI-ELLIPTIC FUNCTION MICROSTRIP INTERDIGITAL FILTER

Ronald E. Stegens, Brookeville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 27, 1979, Ser. No. 108,250

Int. Cl.³ H01P *1/203, 1/205, 3/08*

U.S. Cl. 333—204 **9 Claims**



1. In a microstrip interdigital filter having a desired passband, said passband comprising at least a lower frequency skirt, having a desired location and slope, said microstrip interdigital filter having a supporting structure and a microwave circuit mounted thereon; means for effecting a change in (1) said location of said low frequency skirt and (2) said slope of said low frequency skirt comprising:

(a) cover means having first and second ends fixedly attached to said supporting structure so as to cover said filter;

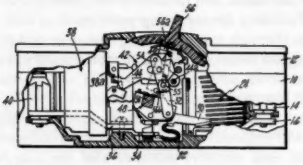
(b) a first dielectric layer located between said supporting structure and said first end of said cover means.

4,281,303

INDIVIDUAL CIRCUIT BREAKER POLE TRIP MECHANISM

Eldon B. Heft, West Hartford, Conn., assignor to General Electric Company, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,982
Int. Cl.³ H01H 77/10
U.S. Cl. 335—16 10 Claims



1. A circuit breaker having a spring-powered operating mechanism manually operable between open and closed conditions, a trip mechanism responsive to an over-current condition for tripping the operating mechanism to initiate automatic conversion of same from its closed condition to its open condition, and at least one breaker pole comprising, in combination:

A. carrier means coupled with the operating mechanism and mounted for pivotal movement between open and closed positions as the operating mechanism articulates between its open and closed conditions, respectively;

B. an elongated, conductive arm pivotally mounted adjacent one end by said carrier means at a location displaced from the pivotal mounting location of said carrier means;

C. a movable contact carried by said arm adjacent the other end thereof.

D. a stationary contact;

E. a magnetic field piece inductively coupled with the current flowing through the breaker pole;

F. an armature mounted for movement from a quiescent position to an actuated position under the magnetic attraction of said field piece as developed by fault current flowing through the breaker pole;

G. a first latch surface carried by said arm at a location beyond said arm pivotal mounting location from said movable contact;

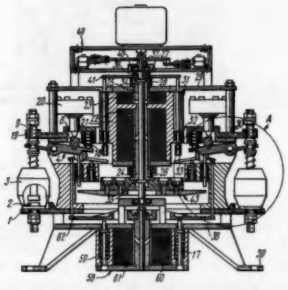
H. a second latch surface carried by said armature for latching engagement with said first latch surface with said armature in its quiescent position to latch said arm against pivotal movement relative to said carrier means, whereby said arm is pivoted between a closed circuit position where said movable contact engages said stationary contact and an open circuit position in concert with the pivotal movement of said carrier means between its closed and open positions, respectively, said latching surfaces disengaging upon attraction of said armature to its actuated position to free said arm for independent, uninhibited pivotal movement motivated by the flow of fault current from its closed circuit position to a tripped open position distinct from its open circuit position, the angle of the current path in said arm in its tripped open position relative to the line of separation of said contacts being more acute than when said arm is in its open circuit position.

4,281,304

ELECTRIC CIRCUIT SWITCHGEAR

Vitaly I. Koshman, bulvar Shevchenko, 123, kv. 25; Vladimir F. Petrichenko, ulitsa Prozhektornaya, 6, kv. 44; Boris S. Gnilitsky, ulitsa Artema, 116, kv. 21, all of Donetsk; Vyacheslav G. Mironenko, ulitsa Stromynka, 11, korpus 2, kv. 120, Moscow, and Pavel V. Kamshitsky, prospekt Mira, 53a, kv. 23, Donetsk, all of U.S.S.R.

Filed Feb. 26, 1979, Ser. No. 15,167
Int. Cl.³ H01H 3/26
U.S. Cl. 335—72 3 Claims



1. An electric circuit switchgear comprising:

a fixed panel;

a plurality of main contacts circumferentially arranged on said panel;

a plurality of auxiliary contacts for switching over the switchgear control circuits;

a driving shaft;

a rotary electromechanical drive for turning said driving shaft through a pre-set angle;

an electromagnetic drive having an electromagnet for closing said main and auxiliary contacts, at least one electromagnet for disconnecting said main and auxiliary contacts, and an actuating element,

said actuating element of said electromagnetic drive including an armature of said electromagnet for closing said main and auxiliary contacts, which armature being mounted on said driving shaft for moving along the axis thereof and rotated together with said driving shaft;

an armature of at least one of said electromagnets for disconnecting said main and auxiliary contacts, which armature reciprocating when said main and auxiliary contacts are disconnected; and

a plurality of mechanisms for closing and disconnecting said main and auxiliary contacts, which mechanisms having locks for said main and auxiliary contacts;

a switch unit for switching over said main and auxiliary contacts when said electromagnetic drive comes into action, which unit includes

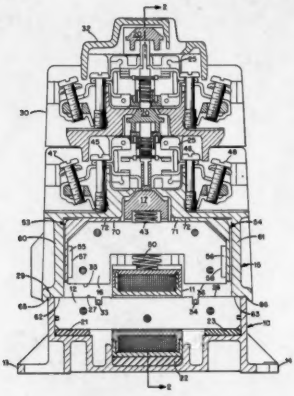
a contactor fixed on said armature of said electromagnet for closing said main and auxiliary contacts,

a disconnector fixed on said armature of said electromagnet for disconnecting said main and auxiliary contacts, both said contactor and said disconnector having at least one projection acting upon said main and auxiliary contacts through said mechanisms for closing and disconnecting said main and auxiliary contacts.

4,281,305
ELECTROMAGNETIC SWITCHING APPARATUS

Robert W. Weeks, Lyndhurst, Ohio, assignor to Clark Control, Inc., Cleveland, Ohio

Filed Jun. 18, 1979, Ser. No. 50,000
Int. Cl.[3] H01H *50/16*
U.S. Cl. 335—132 8 Claims

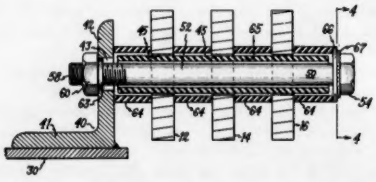


1. An electromagnetic switching apparatus comprising
a first housing section;
an operating coil positioned in said first housing section;
a stationary magnetic core positioned in said first housing section and magnetically coupled to the operating coil;
said magnetic core having a pair of pole face structures;
a second housing section;
said second housing section having a pair of reference surfaces;
means for attaching said first and second housing sections together with the pole face structures of said magnetic core abutting the reference surfaces of the second housing section;
a movable armature mounted within said second housing section for reciprocating movement between a first position in which the armature abuts the pole face structures of the magnetic core and a second position in which the armature is spaced from the magnetic core;
switch means mounted in said second housing section; and
switch actuator means movable with the movable armature and coupled to said switch means for actuating said switch means upon movement of the armature between said positions.

4,281,306
ELECTRIC BUS BAR ASSEMBLY FOR POLYPHASE DISTRIBUTION TRANSFORMERS

Charles W. Schoendube, Hickory, N.C., assignor to General Electric Company, Philadelphia, Pa.

Filed May 14, 1980, Ser. No. 149,779
Int. Cl.[3] H01F *33/00*
U.S. Cl. 336—5 7 Claims

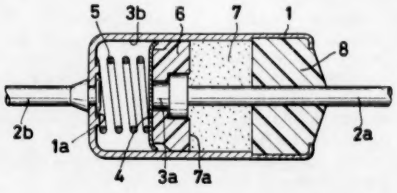


1. Electric bus structure for a polyphase distribution transformer comprising a core-and-coil assembly, said bus structure comprising:
(a) a plurality of horizontally-spaced bus bars located above the core-and-coil assembly, each bus bar having at its horizontally-opposite sides generally vertically-extending surface portions, said bus bars having generally aligned openings extending horizontally therethrough,
(b) a common metallic support member for said bus bars fixed to said core-and-coil assembly and having a horizontally extending opening generally aligning with the openings in said bus bars,
(c) a metal fastening device having a shank, a head at one end of the shank, and threads at the other end of the shank,
(d) said fastening device being positioned so that said shank extends through said aligned openings in said bus bars and said support member and so that said head is at the opposite side from said support member of the bus bar most remote from the support member,
(e) tubular spacers of insulating material surrounding said shank and respectively located between adjacent bus bars, between said support member and the bus bar closest thereto, and between said most remote bus bar and the head of said fastening device,
(f) internally-threaded means cooperating with said threaded portion of said shank to provide force-transmitting means between said support member and said fastening device, said internally-threaded means cooperating with said head when relative rotation occurs between said shank and said internally-threaded means to clamp said bus bars together and to said support member, and
(g) a sleeve of insulating material surrounding said shank and positioned within the openings in said bus bars for providing an insulating barrier between said bus bars and said shank.

4,281,307
THERMAL CUT-OFF FUSE

Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Kanagawa, Japan

Filed Feb. 21, 1980, Ser. No. 123,133
Int. Cl.[3] H01H *37/36*
U.S. Cl. 337—114 5 Claims



1. A self-restoring type thermal cut-off fuse for making electric continuity between first and second lead wires extended out of a housing when the temperature of the ambience is lower than a prescribed temperature and breaking said electric continuity when said temperature rises above the prescribed temperature, which thermal cut-off fuse comprises an electrically conductive contact means adapted to move between first and second positions in a hollow space of said housing and, while at said first position, remain in contact with both first and second terminal portions electrically connected within said housing respectively to said first and second lead wires and, while at said second position, separate from at least one of said first and second terminal portions; a temperature-sensitive member tightly sealed in a space on the side of the first position of said contact means within the hollow space of said housing so as to abut one surface of said contact means, said temperature-sensitive member having the property of

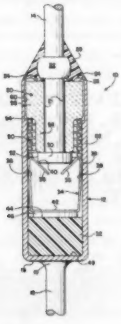
retaining a solid state under normal conditions and, at the prescribed temperature, melting with increase in volume and, on falling to a temperature lower than said prescribed temperature, solidifying with loss of volume; and resilient energizing means adapted to keep said contact means energized at all times in the direction from the second position to the first position and possessed of energizing force insufficient to overcome the force which said temperature-sensitive member generates upon melting with increase in volume in the direction of causing the surface of said temperature-sensitive member abutting said contact means to move said contact means to the second position and sufficient to energize said contact means to the first position at the time said temperature-sensitive member solidifies with loss of volume.

4,281,308

THERMAL SWITCH WITH SPLIT RING CONSTRUCTION

John K. McVey, Bensenville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 107,750
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—407 **7 Claims**



1. A thermal switch comprising an elongated conductive housing having first and second ends, a first axial lead electrically connected to said conductive housing at said first end, an insulator positioned in said conductive housing at said second end, a second lead that passes through said insulator into the interior of said housing, a thermally sensitive pellet having a generally flat top surface inserted in said housing at said first end and positioned so as to leave a gap between said insulated lead and said pellet, and a compressed coiled spring that encircles at least a portion of said insulator so as to provide a spring bias force toward said sensing pellet and an electrically conductive contact member having a generally flat base surface which lies substantially parallel to said top surface of said thermal sensing pellet, side contact surfaces which contact the inside of said conductive housing, a plurality of inwardly-bent contact surfaces which contact said insulated lead and a plurality of bend portions, from which said inwardly bent contact surfaces project, in contact with said coiled spring, said inwardly-bent contact surfaces and said side contact surfaces being initially deformed as a consequence of the dimensions of said gap so that said contact makes electrical connection to said housing and said second lead.

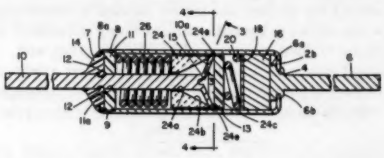
4,281,309

THERMALLY ACTUATED CUT-OFF LINK OR SWITCH AND METHOD OF MAKING THE SAME

Harry W. Olson, 3124 - 63rd St., Woodridge, Ill. 60515

Continuation-in-part of Ser. No. 891,020, Mar. 28, 1978, abandoned. This application Apr. 2, 1979, Ser. No. 25,949
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—409 **30 Claims**

1. An ambient thermal switch comprising: a casing of electrically conductive material; a first power lead in said casing exposed to the outside of said casing through an opening in said casing where it is insulated therefrom, said first power lead having at the inner end thereof deformable contact-forming arm means for making a low resistance contact with the inner conductive surface of said casing when expanded outwardly to a given degree; a second exposed power lead making a permanent low resistance connection with said casing; a sandwich of serially located elements urged under spring pressure between fixed spaced points in said casing and including stressed spring means, arm-deforming means for deforming said arm means inwardly out of contact with said casing, backing means for said arm means for expanding said arm means against said casing to establish a given low resistance contact therewith,



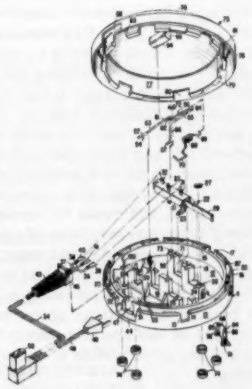
and a fusible body which melts at a given control temperature causing the stressed spring means to move to an unstressed state, said spring, arm-deforming and backing means being positioned for causing one of said arm-deforming and backing means to move against said arm means when the spring means moves to its unstressed state and effecting the expanding or contracting of said contact-forming arm means.

4,281,310

FOOT CONTROLLER

Albert N. Cook, Madison, and Boleslaw Kornatowski, Elizabeth, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Feb. 28, 1980, Ser. No. 125,732
Int. Cl.³ H01C *10/10*
U.S. Cl. 338—108 **15 Claims**



1. A foot controller comprising: a variable resistance means; a first molded member comprising a round base molded of insulating material, the base comprising a floor, first and second coaxial cylindrical walls adjacent the perimeter of the base and defining an annular space therebetween, the first wall surrounding the second wall, a first set of projections angularly spaced apart and projecting into the annular space from one of the walls, and integrally formed boss means to support variable resistance means;

a second molded member comprising a cover molded of insulating material and comprising third and fourth coaxial cylindrical walls adjacent the perimeter of the cover, the third wall extending into the annular space between the first and second walls and having a second set of projections angularly spaced apart and projecting therefrom to engage the first set of projections, the arcuate length of each of the projections of the second set being less than the angular spacing between adjacent projections of the first set to pass therebetween, the internal diameter of the fourth wall being greater than the external diameter of the first wall of the base;

means to maintain the first and second molded members in a relatively fixed angular orientation to keep the projections of the first set engaged with the projections of the second set to keep the first and second molded members together while allowing limited axial and tilting movement of one of the molded members relative to the other; and

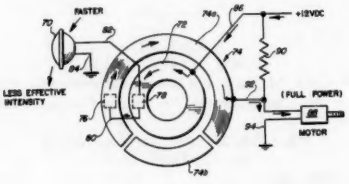
resilient means to urge the molded members axially apart, thereby urging the first set of projections into engagement with the second set of projections.

4,281,311

METHOD AND APPARATUS FOR INCREASING EFFECTIVE LIGHT INTENSITY OF A ROTATING LIGHT

Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Filed Jun. 7, 1979, Ser. No. 46,173
Int. Cl.³ B60Q *1/46;* H02P *5/08*
U.S. Cl. 340—81 R **1 Claim**



1. A rotatable signal light assembly comprising, in combination, a lamp mounted for rotation for producing light flashes in a plurality of different directions during a complete revolution of the lamp, and drive means for rotating said lamp at a non-uniform rate of speed which changes at least twice during said complete revolution to produce at least two different rates of speed during said revolution, said drive means including means effecting a reduced rate of motion when said lamp is aimed in a predetermined direction where it is desired to provide a light flash of increased intensity, said drive means including a variable speed drive motor, and means for varying the speed of said motor during a complete revolution of said lamp by varying the electrical power supplied to said motor, said means for varying the electrical power supplied to said motor comprising segmented collector ring means providing at least two alternate circuits between an electrical power source and said electric motor, each of said alternate circuits being operative during a selected respective portion of one complete revolution of said lamp.

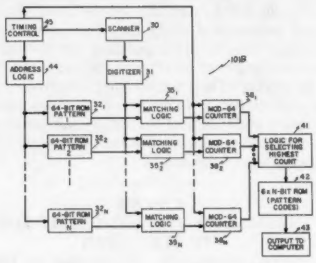
4,281,312

SYSTEM TO EFFECT DIGITAL ENCODING OF AN IMAGE

Donald R. Knudson, Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 4, 1975, Ser. No. 628,712
Int. Cl.³ G06K *9/50;* H04N *1/00*
U.S. Cl. 340—146.3 MA **15 Claims**

1. A method of representing an image, that comprises: scanning the image as a series of sub-images in uniform block form wherein block dimensions are the order of 1/100-inch, digitizing the same, comparing a digital representation of the same



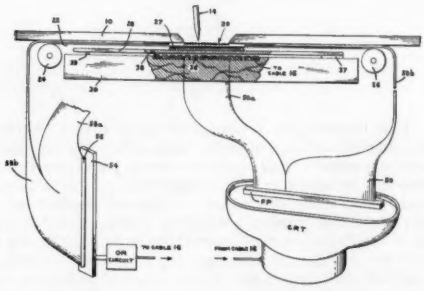
with digital representations of a set of reference blocks to select a reference block that most nearly matches the sub-image, and reproducing said image from the digital representations of the selected reference blocks.

4,281,313

BAROOPTICAL VERIFICATION APPARATUS

Austin G. Boldridge, Jr., Freehold, N.J., assignor to Conversational Systems, Inc., New York, N.Y.

Filed Jun. 15, 1979, Ser. No. 48,804
Int. Cl.³ G06K *9/20*
U.S. Cl. 340—146.3 SY **12 Claims**

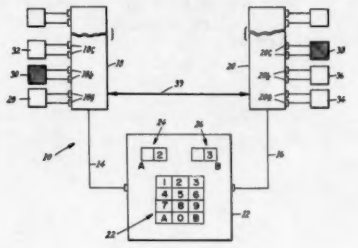


1. Barooptical identification verifier apparatus comprising: a first planar conductor means comprising a first plate of non-conductive material having a surface opposite said second planar conductor means upon a part of said first plate is deposited a layer of conductive material; a second planar conductor means opposite said first planar conductor means comprising a second plate of conductive material; spacer means for rigidly fixing in spaced parallel relationship one end of said second plate to a corresponding end of said first plate and a foot rest point edge means fixed to the other end of said first plate for slidingly supporting the corresponding other end of said first plate; a stylus adapted to be gripped by the person whose identification is to be verified for moving over said second planar conductor means; optical means for indicating the position of said stylus on said second planar conductor means; and a utilization means connected to said planar conductor means and responsive to the changes in the electrical capacitance of said planar conductor means, said utilization means also being connected to said optical means and responsive to indications of said stylus whereby combined three dimensional indications of the movement of the stylus can be obtained.

4,281,314
SELECTION SWITCHING APPARATUS

Theodore R. Hunt, Aloha, Oreg., assignor to Morris S. Wagner, Beaverton, Oreg., a part interest

Filed Jun. 5, 1978, Ser. No. 912,942
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—147 R **2 Claims**



1. Electrical apparatus for selectively interconnecting different pieces of audio electrical equipment, said apparatus comprising

means defining a plurality of binary-code-designated, address-assigned electrical coupling ports, each being adapted for external connection to a different piece of such equipment,

means for addressing different selected pairs of said ports utilizing related binary-coded addresses,

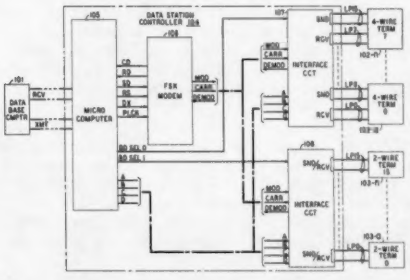
electronic memory means operatively connected to said addressing means for memorizing and storing the addresses of each such addressed pairs of ports, and

selectively changeable circuit-path establishing means operatively connected both to said memory means and to said ports, operable, with said memory means storing the addresses of ports in an addressed pair of ports, to establish a circuit path coupling the same.

4,281,315
COLLECTION OF MESSAGES FROM DATA TERMINALS USING DIFFERENT PROTOCOLS AND FORMATS

Henry C. Bauer, Morganville; Gary J. Burns, Jackson; Clair A. Buzzard, Lincroft; Travis H. Gordon; Heinz Kahlbrock, both of Holmdel; Robert F. Ricca, Neptune, and Robert M. Zachok, Lavallette, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 27, 1979, Ser. No. 69,975
Int. Cl.³ G06F *3/00;* **H04Q** *5/00*
U.S. Cl. 340—147 R **15 Claims**



1. In a polling system wherein each of a plurality of terminals **(102, 103)** is sequentially selected to communicate with a common station **(104)** in response to selection signals, the station including means **(201, 203)** for determining the terminal to be selected and signaling and signal responsive means **(206, 207, 106)** for transmitting the selection signals to select the determined terminal and for communicating with the terminal thus selected,

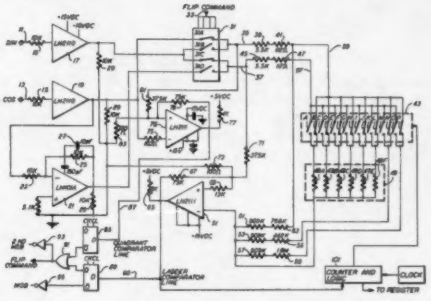
characterized in that

the common station further includes memory means **(202)** for storing instructions defining a first and second communication procedure individually used for selecting different ones of the terminals, means **(201)** responsive to the determining means for accessing the memory means to obtain the instructions defining the procedure individual to the terminal to be selected, and means **(201, 206, 207)** responsive to the accessed instructions for controlling the signaling and signal responsive means to transmit the selection signals in accordance with the communication procedure defined thereby.

4,281,316
SUCCESSIVE APPROXIMATION S/D CONVERTER WITH INHERENT QUANTIZATION ERROR CENTERING

David J. Simon, Saddle Brook, N.J., and Edward C. Costello, Scarsdale, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Aug. 11, 1978, Ser. No. 932,829
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 SY **12 Claims**



10. In a successive approximation synchro-to-digital converter which includes first and second comparators having as respective inputs voltages corresponding to the sine and cosine of the synchro angle and providing outputs which are decoded to determine the quadrant in which the angle lies and which also includes a steering voltage comparator receiving inputs from a ladder network and providing an output to control selection of the less significant bits, the improvement comprising:

a single comparator used as one of the quadrant comparators and as the steering voltage comparator; and

means to provide an error-centering compensation signal to said comparator.

4,281,317
MASKED HYSTERESIS IN DUAL-SLOPE ANALOG-TO-DIGITAL CONVERTER

W. David Pace, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 19, 1979, Ser. No. 31,554
Int. Cl.³ H03K *13/20*
U.S. Cl. 340—347 NT **11 Claims**

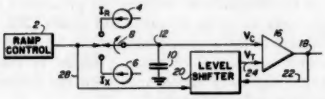
1. In a dual-slope analog-to-digital (A/D) conversion system of the type wherein a comparator compares a ramp voltage consisting of first and second sloped voltage ramps with a threshold voltage for generating digital output transitions at the crossover points thereof, said ramps being initiated by a

ramp control signal, a circuit for reducing offset error comprising:

a threshold voltage generating circuit coupled to an input of said comparator;

first means responsive to said ramp control signal and coupled to said input for altering said threshold voltage in a first direction upon a first transition of said ramp control signal and, subsequent thereto, in a second direction upon a second transition of said ramp control signal; and

second means coupled to said input for again altering said threshold voltage in said first direction when said first ramp crosses said threshold voltage and, subsequent thereto, in said second direction when said second ramp crosses said threshold voltage.



4,281,318

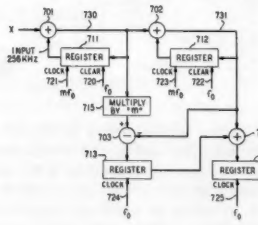
DIGITAL-TO-DIGITAL CODE CONVERTER

James C. Candy, and Bruce A. Wooley, both of Tinton Falls, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 30, 1980, Ser. No. 154,843

Int. Cl.³ G06F *5/06*

U.S. Cl. 340—347 DD **7 Claims**



1. Apparatus for converting a series of input samples at a frequency mf_0 to a series of output samples at rate f_0, the value of each of said output samples being a weighted sum of 2m of said input samples occurring in an accumulation period prior to said each output sample, comprising:

first and second linear accumulators connected in cascade arrangement, the output of said first accumulator representing the unweighted sum of m particular ones of said input samples, and the output of said second accumulator representing a uniformly distributed weighted sum of said m particular input samples, wherein the weight of the first of said m samples is m times greater than the weight of the last of said samples,

means for multiplying said first accumulator output by a scaling factor m,

means for forming the difference between the output of said multiplying means and said output of said second accumulator,

means for delaying the output of said difference forming means until the next m input samples are accumulated, and

means for adding the output of said delaying means to said output of said second accumulator to form one of said output samples.

4,281,319

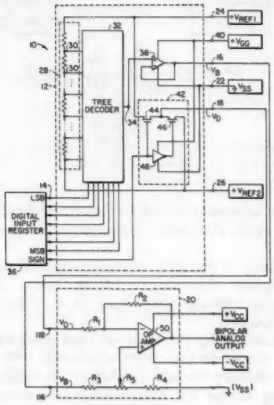
DIGITAL-TO-ANALOG CONVERTER

Ben D. Roberts, Jr., San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,122

Int. Cl.³ H03K *13/11*

U.S. Cl. 340—347 DA **8 Claims**



1. An apparatus for converting a digital code of a plurality of digital signal lines into an analog signal value representative of said digital code wherein said analog signal value may have either a positive or negative polarity, said apparatus comprising:

a Metal Oxide Semiconductor silicon substrate including means for coupling said substrate to a ground reference as the substrate reference voltage V_{ss};

a Metal Oxide Semiconductor resistor means disposed on said substrate in a series ladder having means for coupling a first end to a first analog voltage reference V_{ref1} and a second opposing end to a second analog voltage reference V_{ref2}, such that said first analog voltage reference is of a higher voltage and of the same polarity as said second analog voltage reference and said substrate is reverse biased between said first analog voltage and said substrate reference voltage, said resistor means having a plurality of taps between said first end and said second end thereby to define a 2^NR ladder;

a first analog signal node upon said substrate, said first node coupling voltage signal lines through a first pair of analog switches to said first analog voltage reference and to said second analog voltage reference, said first pair of analog switches being coupled in inverting complement having its control input coupled to means for providing a sign bit of said digital signal lines;

a tree decoding means on said substrate coupling voltage signal lines between said taps and a second analog signal node through analog switches, said analog switches being coupled in pairs in inverting complement to means for providing bit values of said digital signal lines;

means on said substrate for conveying a signal representative of said voltage signal at said second node to an output terminal of said substrate; and

amplifier means coupled to said first node and to said substrate output terminal, said amplifier means having a first input and a second input, said second input being responsive to a voltage signal applied to said second node for reproducing as an output a signal having an amplitude proportional to said voltage signal, and said first input

being responsive to selected first and second voltage levels at said first node to establish the polarity of said signal applied to said second node.

4,281,320

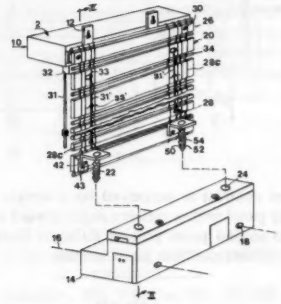
COMBINED PROTECTIVE BARRIER AND BURGLAR ALARM

Ariel Rosenberg, 4 Ophir St., Tel Aviv, Israel

Filed Sep. 11, 1979, Ser. No. 74,421

Int. Cl.³ G08B *13/08, 13/12*

U.S. Cl. 340—545 **6 Claims**



1. A protective barrier for mounting to a structure to cover an opening therein, comprising: a plurality of slats mounted to said structure at one end of said opening and extending in spaced parallel relationship towards the opposite end of said opening; two groups each including a plurality of flexible cords extending at right angles to said slats along opposite sides thereof, said flexible cords being interwoven between said slats for securing them in said spaced parallel relationship but permitting them to be pivotted to open the slats and to be moved towards one end of the opening to open the barrier; at least some of said flexible cords including metal wires serving to securely hold the slats together and also to serve as electrical conductors; each of said groups of flexible cords being of yarn only some of which include said metal wires in a manner so as not to be readily distinguishable from those yarns which do not include metal wires; circuit means including said metal wires establishing an electrically-conductive pathway through the length of said barrier; means for supplying electrical power to said electrically-conductive pathway; an end member secured to the structure along said opposite end of the opening therein; mating retaining means carried by said end member and one end of the barrier mechanically retaining the barrier in its closed position covering said opening; circuit interrupting means effective, when the barrier is retained in its closed position, to establish electrical continuity in said electrically-conductive pathway through the length of said barrier, and when moved from its closed position to interrupt said electrical continuity; a signalling device actuated by an interruption in said pathway caused by the severance of said metal wires in the barrier or by the actuation of said circuit interrupting means.

4,281,321

SURVEILLANCE SYSTEM EMPLOYING A FLOOR MAT RADIATOR

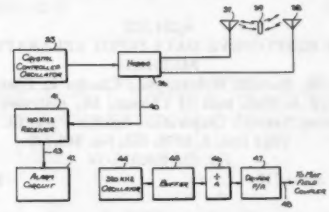
Douglas A. Narlow, and James G. Farrar, both of Coral Springs, Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Jun. 9, 1980, Ser. No. 157,848

Int. Cl.³ G08B *13/24*

U.S. Cl. 340—572 **7 Claims**

1. A surveillance system for detecting the presence in a controlled space of a miniature electromagnetic wave receptor-reradiator with signal mixing capability, comprising in combination means for propagating through said space an electromagnetic microwave signal, a source of low frequency signals, an electrode coupled to said source of low frequency signals for disposition along the path of travel of said receptor-reradiator through said space for direct capacitive coupling to said receptor-reradiator whenever the latter is present in said space, signal detecting means coupled to said space for receiving signals therefrom and detecting signals related to said low frequency signals only when received as modulation on a carrier signal whose frequency bears a predetermined relationship to that of said microwave signals, and means coupled to said detecting means for providing an alarm responsive to detection of said signals that are related to said low frequency signals.



4,281,322

FUSE BLOWING DETECTOR

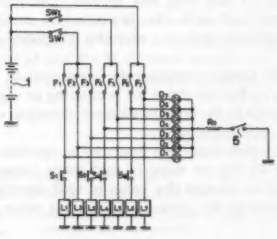
Tetsuji Nasu, Yokohama, and Mitsuyoshi Nagayama, Fujisawa, both of Japan, assignors to Nissan Motor Company, Ltd., Kanagawa, Japan

Filed Sep. 12, 1979, Ser. No. 75,181

Claims priority, application Japan, Oct. 4, 1978, 53-135498[U]

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—638 **18 Claims**



1. In an electrical circuit wherein a first terminal of an electrical source is connected to first terminals of a plurality of fuses, and the second terminal of the fuses are connected to the first terminals of the same number of loads, the other terminals of the loads being connected to the other terminal of the electrical source, whereby the loads are supplied with electrical power via their respective fuses,

a device for detecting the blowing of any one of the fuses, comprising:

(a) for each fuse, a light emitting element, one terminal of which is connected to the second terminal of the fuse,

(b) a switch, one terminal of which is connected to all the other terminals of all the light emitting elements, and the other terminal of which is connected to the said other terminal of the electrical source, and

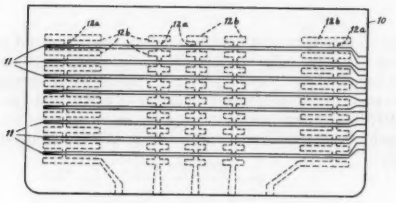
(c) an electrically insulating housing for each fuse, each fuse being mounted in its housing between two spaced electrically conductive strips, one of the strips being

connected, via the light emitting element which corresponds to the fuse, to a third electrically conductive strip mounted within the housing, the light emitting element being received in a groove on said housing, the third strips all being connected together to the switch, the one strips all being each connected to the load corresponding to this fuse, the remaining strips being connected to the electrical source.

4,281,323
NOISE RESPONSIVE DATA INPUT APPARATUS AND METHOD

Bradley W. Burnett, Hobart, Ind.; Charles E. Fiterman, and Leonard A. Fish, both of Chicago, Ill., assignors to Bank Computer Network Corporation, Schiller Park, Ill.

Filed Dec. 5, 1978, Ser. No. 966,739
Int. Cl.[3] G06F *3/14*
U.S. Cl. 340—712 **13 Claims**



1. A data input device associated with a display unit comprising:

a thin, transparent member positioned in front of said display unit,

a plurality of elongate transparent conductive strips mounted in spaced-apart relation on one side of said transparent member,

a second plurality of elongate transparent conductive strips mounted in spaced-apart relation on the other side of said transparent member,

portions of said first and second conductive strips being aligned with each other in a direction normal to the face of said display unit at a plurality of spaced-apart locations; and

detector means continuously connected to at least one of said conductive strips for producing an electrical signal in response to the level of ambient electrical noise present on said conductive strip,

whereby placement of a finger by an operator into a position close to one or more of said strips causes said detector means to change the value of said electrical signal, irrespective of the presence of ambient noise radiation.

4,281,324
MATRIX TYPE LIQUID CRYSTAL DISPLAY

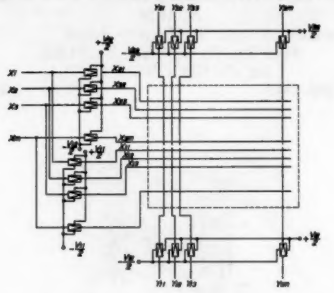
Keisaku Nonomura; Toshiaki Takamatsu, both of Nara; Hisashi Uede, and Tomio Wada, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1978, Ser. No. 955,318
Claims priority, application Japan, Oct. 31, 1977, 52/131370
Int. Cl.[3] G08B *5/36*
U.S. Cl. 340—784 **1 Claim**

1. A matrix type liquid crystal display panel system comprising:

a matrix type liquid crystal display panel having matrix electrodes, said liquid crystal display panel having at least a first panel portion and a second panel portion; and

driving means for line scanning said matrix type liquid crystal display panel, said driving means supplying said first panel portion and said second panel portion with different drive voltages, the drive voltage applied to said first panel portion being selected to develop substantially the highest contrast as perceived by a viewer viewing said display panel with a viewing angle toward a middle point in the first panel portion, the drive voltage applied to the second panel portion being selected to develop substantially the

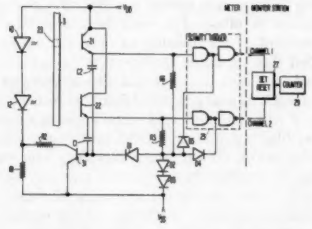


highest contrast as perceived by a viewer viewing said display panel with a viewing angle toward a middle point in said second panel portion different from the viewing angle toward said first panel portion.

4,281,325
POSITIVE FEEDBACK METER PULSE INITIATOR

Curt W. Jarva, Jamaica Plain, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Aug. 17, 1979, Ser. No. 67,263
Int. Cl.[3] G08C *19/36, 19/16*
U.S. Cl. 340—870.29 **7 Claims**



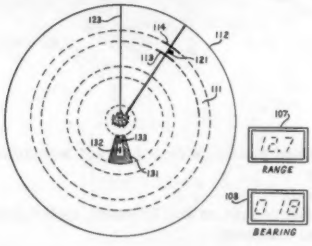
1. A meter pulse initiator for use with a watthour meter of the type comprising a rotor disc having at least one creep hole therein, said meter pulse initiator comprising at least one light emitting diode disposed adjacent said rotor disc for directing at least one beam of radiant energy toward one side of said disc along the path of rotary movement of said creep hole to effect a transmission of said radiant energy through said rotor disc when said creep hole passes through said beam, at least one phototransistor disposed adjacent said rotor disc for producing a signal in response to the transmission of radiant energy through said creep hole to the other side of said rotor disc, the magnitude of the signal provided by said phototransistor being related to the intensity level of the radiant energy which is transmitted through said creep hole, a first energizing circuit connected to said light emitting diode and operable to cause said light emitting diode normally to emit radiant energy at a comparatively low intensity level, and a normally inactive second energizing circuit connected to said light emitting diode and operable, when activated, to supply a comparatively brief current pulse to said light emitting diode in supplementation of the energization supplied to said light emitting diode by said first energizing circuit thereby to cause a comparatively brief increase in the intensity level of the radiant energy which

is emitted by said light emitting diode, said second energizing circuit including control means responsive to the comparatively small magnitude of signal provided by said phototransistor as a result of the passage of radiant energy at said comparatively low intensity level through said creep hole for activating said second energizing circuit and subsequently operable, in response to the resulting increased magnitude of signal produced by said phototransistor, to deactivate said second energizing circuit, whereby the transmission of radiant energy at said comparatively low intensity level through said creep hole effects a pulse-like increase in the intensity level of the radiant energy which is emitted by said light emitting diode followed by a return of said light emitting diode to its normal comparatively low intensity level of emission and a resulting pulse-like increase and decrease in the magnitude of the signal produced by said phototransistor, notwithstanding the continued passage of radiant energy through said creep hole.

4,281,326
AUTOMATIC COLLISION WARNING TARGET DISPLAY SYSTEM

Lawrence F. Anderson, 344 Westline Dr., #C121, Alameda, Calif. 94501

Filed Apr. 27, 1976, Ser. No. 680,685
Int. Cl.[3] G01S *13/00*
U.S. Cl. 343—5 EM **9 Claims**

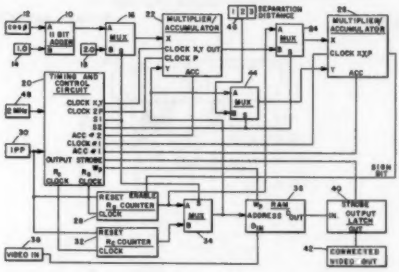


1. An automatic collision warning system adapted for use with a radar system having a display scope and generating echo signals containing information relative to bearing and range of targets reflecting radar pulses comprising a range gate connected to said radar system and having control means for setting maximum and minimum ranges to pass only echo signals from a range zone between these limits, means applying signals representative of said maximum and minimum ranges of said range gate to said radar system for display as range lines on said radar scope, target verification means connected to receive signals passed by said range gate and only passing echo signals of targets which repeat a predetermined number of times in a predetermined period of time, a variable azimuth gate connected in series with said range gate and having manually adjustable control means for presetting maximum and minimum degrees of bearing of radar echo signals passed thereby whereby said target verification means only receives echo signals in a predetermined controllable azimuth sector of radar operation, means connecting said variable azimuth gate to said radar system for limiting the angular extent of said range lines to the azimuth sector controllably set by said variable azimuth gate, and an alarm system connected to receive signals passed by said range and azimuth gates and target verification means and operated thereby to automatically produce an alarm indication upon actuation by received signals.

4,281,327
RANGE CORRECTOR CIRCUIT FOR A BISTATIC PASSIVE RADAR DISPLAY

Lawrence M. Frazier, West Covina, and William H. Johnson, Upland, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Dec. 14, 1979, Ser. No. 103,327
Int. Cl.[3] G01S *13/16*; G06G *7/78*
U.S. Cl. 343—12 R **6 Claims**



1. In a bistatic passive radar system including a directional antenna for receiving input pulses from a host transmitter, an omni-directional antenna for receiving reflected pulses from targets illuminated by said host transmitter, a plan position indicator (PPI) display, and a sweep generator for generating linear traces on said display, the improvement for correcting the range of the target returns comprising:

a R_a counter,

a R_c counter,

a random access memory (RAM),

means for resetting both counters upon receipt of a transmitter pulse,

means for continuously incrementing said R_c counter at a linear rate,

a first multiplexer,

means coupling the output of both counters in parallel to the address input of said RAM through said first multiplexer,

means for incrementing said R_a counter in accordance with the equation:

$$R_c=(R_a^2+2R_aD)/(R_a+D(1+\text{Cos }\phi))$$

where

R_c=the correct range to the target;

R_a=the apparent range to the target;

D=the distance from the bistatic passive radar to the host transmitter;

and ϕ=the angle between the extension of a line extending from the bistatic passive radar through the host transmitter and a line extending from the host transmitter to a selected target;

means for writing target returns into said RAM at the address specified by said R_c counter; and

means for reading target returns out of said RAM at the address specified by said R_a counter and applying said target returns to said PPI display,

whereby said target returns appear on the PPI display trace at their correct range with respect to said host transmitter.

4,281,328
SLIP RING ASSEMBLY

Marvin W. Shores, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

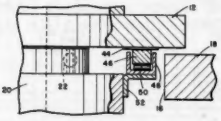
Filed Jan. 28, 1980, Ser. No. 116,340
Int. Cl.[3] H01Q *1/50*
U.S. Cl. 343—763 **6 Claims**

1. In a rotary system having a supporting structure, a rotat-

able unit having a shaft, and a slip ring/brush assembly attached between said shaft and said supporting structure, the improvement comprising:

a flat slip ring of electrically conductive material on said rotatable unit concentric with said shaft and facing axially with respect to said shaft, and said flat slip ring being larger in diameter than said slip ring/brush assembly;

a circular brush mounted on said supporting structure concentric with said flat slip ring and facing said slip ring, said circular brush being approximately the same diameter as said flat slip ring;



means urging said circular brush into electrical contact with said flat ring;

means electrically connecting said flat slip ring to said rotatable structure; and

whereby large pulses of electrical energy applied to said rotating structure are conducted to said supporting structure through said flat slip ring and circular brush without passing in close proximity to the electrical circuits passing through said slip ring/brush assembly.

4,281,329

LIQUID RECORDING MEDIUM

Yasuhiro Yano, Tokyo; Masahiro Haruta, Funabashi, and Tokuya Ohta, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

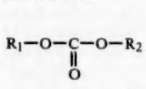
Filed Jun. 19, 1979, Ser. No. 49,956

Claims priority, application Japan, Jun. 20, 1978, 53-75145; Jun. 1, 1979, 54-68562

Int. Cl.³ G01D *9/00*; C09D *11/00*

U.S. Cl. 346—1.1 **70 Claims**

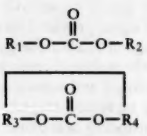
1. A liquid recording medium for use in a recording device, wherein said liquid recording medium is discharged from a discharge orifice in a recording head of the device and spattered in the form of droplets, for recording, characterized in that said liquid recording medium contains therein a coloring agent and a carbonic acid ester compound represented by the general formula A as follows:



(A)

wherein R_1 and R_2, which may be the same or different, each represents an alkyl, alkenyl or haloalkyl radical, wherein the content of said carbonic acid ester in said liquid recording medium is from 5 to 99.5 percent by weight based on the total weight of the liquid recording medium.

24. In the process for recording information comprising ejecting and spattering a colored liquid recording medium as droplets from an orifice onto a recording member, the improvement comprising: employing in said liquid recording medium a carbonic acid ester compound in amounts from 5 to 99.5 percent by weight based on the total weight of the recording medium, said carbonic ester compound being represented by the general formula A or B as follows:



(A)

(B)

wherein R_1 and R_2, which may be the same or different, each represents an alkyl, alkenyl or haloalkyl, radical and wherein R_3 and R_4, which may be the same or different, together form a cyclic alkylene group.

4,281,330

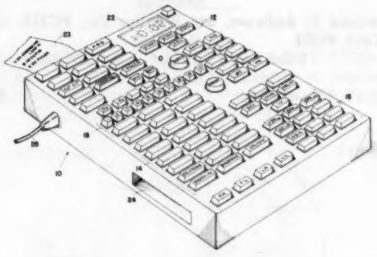
MEDICAL PROCEDURES MONITORING AND RECORDING DEVICE

Nancy J. Warrick, 5104 Robertson Ave., Carmichael, Calif. 95608

Filed Feb. 19, 1980, Ser. No. 122,485

Int. Cl.³ G01D *9/00*

U.S. Cl. 346—20 **8 Claims**



1. A medical procedure recording and monitoring device comprising:

a keyboard;

a first series of keys on said keyboard, each representing a medical treatment;

a treatment signal circuit operative when energized to transmit an electrical signal representative of the medical treatment selected by a key;

a clock circuit operative when energized to transmit signals indicating time;

selectively operated enter means to energize said signal transmitting circuits; and

a recording device to record signals so transmitted.

4,281,331

VARIABLE RATE INK JET PRINTING

Irwin Shair, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jan. 24, 1980, Ser. No. 40,264

Int. Cl.³ G01D *15/18*

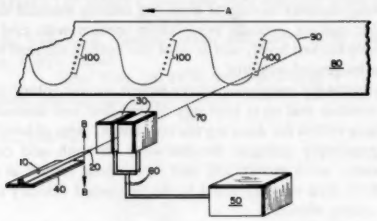
U.S. Cl. 346—75 **5 Claims**

1. The method of variable rate ink jet printing of characters with a fixed frequency of nozzle oscillation which comprises the steps of

a. providing a two dimensional printing matrix of appropriate dimensions, in which the first dimension is a number of scanning cycles and the second is a number of discrete character elements per scanning cycle,

b. selectively skipping scanning cycles in printing and

c. establishing a number of scanning cycles for space between characters,



in order to approximate desired values of characters per second.

4,281,332

DEFLECTION COMPENSATED INK EJECTION PRINTING APPARATUS

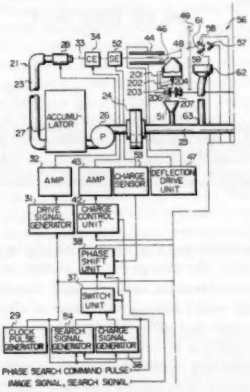
Masanori Horike, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 106,801

Claims priority, application Japan, Dec. 28, 1978, 53-162729; Dec. 30, 1978, 53-165827

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **20 Claims**



1. An ink ejection apparatus characterized by comprising:

container means for containing a predetermined volume of ink;

constricted passageway means shaped such that ink from the container means flows through the constricted passageway means and falls therefrom in the form of drops;

sensor means for sensing the drops;

counter means for counting a number of drops falling per unit time; and

ejection means for ejecting ink and deflecting the ink from an ejection axis in a direction in response to a deflection signal, the container means being disposed along the axis for catching undeflected ink.

4,281,333

INK-ON-DEMAND TYPE INK-JET PRINTER WITH COORDINATED VARIABLE SIZE DROPS WITH VARIABLE CHARGES

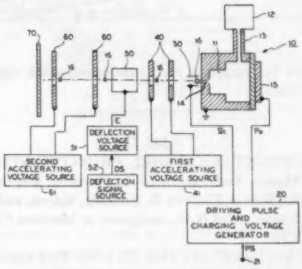
Mitsuo Tsuzuki, and Michihisa Suga, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1980, Ser. No. 120,579

Claims priority, application Japan, Feb. 14, 1979, 54-16652; Feb. 14, 1979, 54-16653; Feb. 22, 1979, 54-20425; Mar. 22, 1979, 54-33746; Apr. 11, 1979, 54-44020; Apr. 12, 1979, 54-44651; May 4, 1979, 54-55023; May 4, 1979, 54-55024; May 4, 1979, 54-55025

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **1 Claim**


DEFLECTION VOLTAGE SOURCE
SECOND ACCELERATING VOLTAGE SOURCE
DEFLECTION SIGNAL SOURCE
FIRST ACCELERATING VOLTAGE SOURCE
DRIVING PULSE AND CHARGING VOLTAGE GENERATOR

1. An ink-jet printer for recording with droplets of conductive ink on a recording medium, comprising:

an ink chamber filled with said conductive ink, said chamber having a nozzle and a piezoelectric member attached to one wall of said chamber, said chamber squirting said droplets out of said nozzle in response to a driving pulse applied to said piezoelectric member, the size of said droplets being responsive to the energy content of said driving pulse;

means for charging said droplets squirted out of said nozzle in response to a charging voltage; and

means for generating said driving pulse and said charging voltage, said charging voltage being responsive to said energy content of said driving pulse.

4,281,334

ELECTROSTATIC LABEL PRINTING SYSTEM

Robert A. Moore, Amherst; Bruce K. Norlund, Keene; Harold S. Kontrovitz, Keene; Clayton B. Robbins, Keene, and Jeffrey B. Brooks, Keene, all of N.H., assignors to Markem Corporation, Keene, N.H.

Filed Oct. 22, 1979, Ser. No. 87,153

Int. Cl.³ G01D *15/06;* **G03G** *15/22*

U.S. Cl. 346—153.1 **14 Claims**

1. An electrostatic label printing system comprising:

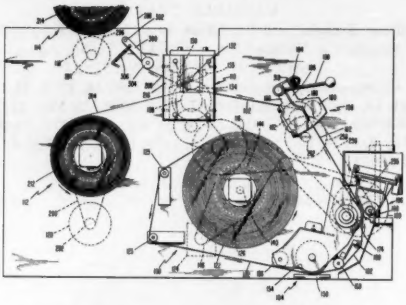
(a) an electrostatic writes station for forming an electrostatic image on a continuous recording medium in response to a synchronization signal,

(b) a rotary cutting station for cutting the continuous recording medium to define individual labels, said rotary cutting station including a rotating cutting member having at least one cutting element thereon having a tangential velocity for defining the individual labels,

(c) means for continuously feeding the recording medium along a feed path from the electrostatic write station to the rotary cutting station at a uniform feed velocity equal to the tangential velocity of said cutting elements,

(d) means cooperating with the rotary cutting station for detecting a predetermined rotational position of each rotary cutting element and for producing in response to said predetermined rotational position said synchroniza-

tion signal for application to the electrostatic write station, and



(e) means for coupling said synchronization signal to said write station.

4,281,335

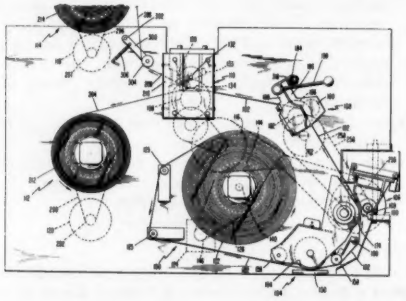
ELECTROSTATIC LABEL PRINTING SYSTEM

Robert A. Moore, Amherst; Bruce K. Norlund, Keene; Harold S. Kontrovitz, Keene; Clayton B. Robbins, Keene, and Jeffrey B. Brooks, Keene, all of N.H., assignors to Markem Corporation, Keene, N.H.

Division of Ser. No. 87,153, Oct. 22, 1979. This application Sep. 25, 1980, Ser. No. 190,508

Int. Cl.[3] G01D *15/06;* **G03G** *15/22*

U.S. Cl. 346—153.1 **5 Claims**



1. An electrostatic label printing system for printing label indicia on a continuous strip of label stock comprising an adhesive-backed layer capable of receiving a latent electrostatic image and a releasable backing layer on the adhesive surface thereof, said electrostatic label printing system comprising:

(a) a supply reel for dispensing a continuous strip of said label stock,

(b) an electrostatic write station for forming a latent electrostatic image on the adhesive-backed layer of said continuous strip of label stock in response to a synchronization signal,

(c) a developing station for rendering visible the latent electrostatic images produced on said continuous strip of label stock by the electrostatic write station,

(d) a pressure fixing station for rendering permanent the visible images developed on said continuous strip of label stock by said developing station, said pressure fixing station comprising first and second pressure rollers for grippingly engaging said continuous strip of label stock therebetween,

(e) a rotary cutting station for cutting only the adhesive-backed layer of said continuous strip of label stock to define individual printed labels on the releasable backing layer, said rotary cutting station including a rotating cutting member having at least one cutting element thereon for making periodic penetrating contact with said adhesive-backed layer, said at least one cutting element having a tangential velocity,

(f) means for supplying rotary power to said rotary cutting member and to at least one of said first and second pressure rollers for drawing the continuous strip of label stock grippingly engaged therebetween through said electrostatic write station and said developing station at a uniform feed velocity equal to the tangential velocity of said cutting element,

(g) means for drawing said continuous strip of label stock through said rotary cutting station at said uniform feed velocity and for rewinding said releasable backing layer with said individual printed labels thereon onto a label takeup reel,

(h) means cooperating with the rotary cutting station for detecting a predetermined rotational position of the rotary cutting member and for producing in response thereto said synchronization signal for application to the electrostatic write station, and

(i) means for coupling said synchronization signal to said write station.

4,281,336

THYRISTOR ELEMENT WITH SHORT TURN-OFF TIME AND METHOD FOR PRODUCING SUCH ELEMENT

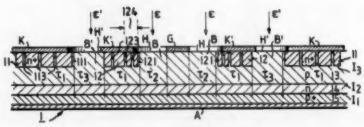
Karlheinz Sommer, and Alois Sonntag, both of Warstein, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,401

Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917786

Int. Cl.[3] H01L *29/74*

U.S. Cl. 357—38 **6 Claims**

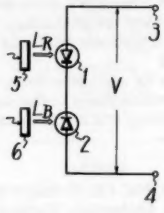


1. In a fast switching thyristor in which, in order to shorten the turn-off time, the charge carrier lifetime is set to be low by means of recombination centers, said thyristor including a semiconductor wafer having four zones of alternating opposite conductivity type including a control base zone which extends to one major surface of said wafer and an emitter zone which is formed within said control base zone adjacent said one major surface and which is penetrated by shorting channels emanating from said control base zone, an emitter electrode on said one major surface contacting said shorted emitter zone, and a control electrode on said one major surface contacting said control base zone; and wherein the charge carrier lifetime in said control base zone of said thyristor is set to be homogeneous and low corresponding to a desired firing resistance underneath said emitter zone with respect to the voltage rise of the returning forward voltage in said thyristor after every recovery process; the improvement wherein: the charge carrier lifetime is set to be lower compared to said homogeneous setting in the partial region of said control base zone extending from below the edge of said control electrode substantially to the portion of the edge of said emitter zone which faces said control electrode but without contacting said edge of said emitter zone.

4,281,337
APPARATUS FOR DETECTING THE COLOR TEMPERATURE OF A SOURCE OF LIGHT AND AUTOMATIC WHITE BALANCING MEANS FOR USE THEREWITH

Takashi Nakamura, Hatano, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,036
Claims priority, application Japan, Mar. 15, 1978, 53/29554
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—29 **13 Claims**



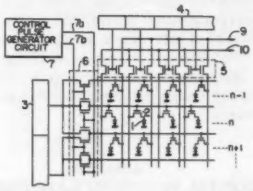
2. Apparatus for white color balance in the event that the color temperature of a televised scene changes from a predetermined level, comprising color temperature detecting means, including first and second semiconductor photosensing elements connected in series circuit, said first and second photosensing elements being oppositely poled in said series circuit, light-filter means for supplying light of predetermined respective colors having respectively different spectral characteristics to said first and second photo-sensing elements, and means coupled across opposite ends of said series circuit for producing a signal representing the color temperature of said televised scene; differential amplifier means connected to receive said signal and having first and second outputs for providing first and second voltages representing the relative intensities of the light received by said first and second photo-sensing elements, respectively; means for supplying first and second color video signal components corresponding to the respective colors of the light received by said first and second photo-sensing elements; first and second combining means for combining each of said first and second color video signal components with a signal representing the difference between said relative intensities of the light received by said first and second photo-sensing elements to vary the levels of said first and second color video signal components, respectively; and adjusting means coupled to said first and second combining means for adjusting the levels of the respective color video signal component outputs from said first and second combining means to substantially the white balanced levels thereof at said predetermined color temperature.

4,281,338
SOLID STATE COLOR IMAGING APPARATUS

Kenji Takahashi, Kodaira; Shusaku Nagahara, Hachioji; Kazuhiro Sato; Masuo Umemoto, both of Tokyo; Toshiyuki Akiyama, Kokubunji, and Morishi Izumita, Inagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,816
Claims priority, application Japan, Sep. 6, 1978, 53-108640
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—44 **7 Claims**

1. In a solid state color imaging apparatus comprising:
a plurality of photo sensitive elements arranged horizontally and vertically in an array;
a signal read-out circuit scanning the plurality of photo sensitive elements of said array with parallel scanning of the photo sensitive elements arranged in sets of two horizontal lines and delivering photo signals from the photo sensitive elements to first and second output circuits associated with the two horizontal lines of the respective sets;
a mosaic color filter having luminance filtering counterparts which alternate horizontally and vertically one after the other with one of first and second filtering counterparts which are arranged at the remaining positions of the mosaic on alternate horizontal lines, each of the filtering counterparts being in register with each of the photo sensitive elements; and
a signal processing circuit for converting the signals developed by the first and second output circuits into a composite color signal combined with a chrominance subcarrier;
the improvement wherein said signal read-out circuit includes means for scanning the plurality of photo sensitive elements of said array at a horizontal clock frequency which is twice the chrominance subcarrier frequency, whereby a first color difference signal between a first chrominance signal corresponding to the first filtering counterpart and a luminance signal is delivered to the first

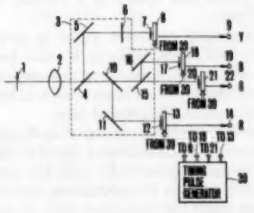


output circuit whereas a second color difference signal between a second chrominance signal corresponding to the second filtering counterpart and the luminance signal is delivered to the second output circuit, said first and second color difference signals varying at the same frequency as the chrominance subcarrier frequency; and
wherein said signal processing circuit includes bandpass filters respectively connected to the first and second output circuits, first means for shifting by $\pi/2$ the phase of the output signal from one of the bandpass filters and for adding the phase-shifted signal to the output signal from the other bandpass filter, second means for obtaining a luminance signal component from the first and second output circuits, and third means for forming a composite color signal from the outputs of the first and second means and a synchronizing signal.

4,281,339
COLOR SOLID STATE IMAGE PICK-UP APPARATUS

Masanobu Morishita, and Takanori Tanaka, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Japan

Filed May 31, 1979, Ser. No. 44,399
Claims priority, application Japan, Jun. 5, 1978, 53/67959
Int. Cl.³ H04N *9/09*
U.S. Cl. 358—52 **8 Claims**



1. A color solid state image pick-up apparatus comprising:
an optical system which separates incident light from an object to be photographed into a brightness light component and a plurality of color light components;
a first solid state image pick-up device having photoelectric

converting units disposed at the position of a light image of said brightness light component;

a group of second solid state image pick-up devices having their photoelectric converting units disposed at positions respectively corresponding to positions of light images of each of said plurality of color light components;

each of said second solid state image pick-up devices having solid state photoelectric converting means, charge transfer electrodes and a charge detection element;

first drive circuit means which drives said first solid state image pick-up device for sequentially detecting signal charges corresponding to the light brightness component of respective photoelectric converting units of said first solid state image pick-up device; and

second drive circuit means which drives each of said group of the second solid state image pick-up devices in a manner to combine signal charges which are sequentially transferred through portions of the solid state photoelectric converting means beneath at least two charge transfer electrodes of at least one second solid state image pick-up device to synthesize an enhanced charge signal detected by the charge detection element to thereby improve sensitivity of the image pick-up apparatus to said color light components.

4,281,340

HORIZONTAL SCANNING RATE CORRECTION APPARATUS FOR BEAM INDEX COLOR CATHODE-RAY TUBE

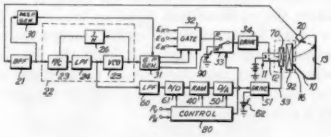
Ichiro Mitamura, Tokyo; Katsuo Isono, Kawagoe, and Takashi Hosono, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 99,911

Claims priority, application Japan, Dec. 7, 1978, 53/152167

Int. Cl.³ H04N *9/24*

U.S. Cl. 358—67 **10 Claims**



1. Horizontal scanning rate correction apparatus for a beam index color cathode ray tube having a display screen with beam-excitable color elements to be scanned by an electron beam as the latter is modulated by color control signals applied through color switching circuitry, and index elements which are scanned by said beam as the latter scans said display screen, said apparatus comprising:

beam deflection means supplied with at least horizontal and vertical deflection signals for causing said beam to repeatedly scan across said screen in a vertical succession of horizontal lines;

means for generating an index signal in response to the scanning of said index elements by said beam, the frequency of said index signal being determined by the frequency of incidence of said beam upon said index elements as it scans across said horizontal lines;

means for controlling the operation of said color switching circuitry in response to said index signal so that said color switching circuitry sequentially switches said color control signals individually for modulating said electron beam as said beam scans the respective ones of said color elements; and

means for compensating for delay errors in said means for controlling by further controlling the scanning of said beam repeatedly across said screen whereby said electron beam scans said color elements in correspondence with the modulation of said electron beam by said respective color control signals, said means for compensating including:

memory means for storing a plurality of correction values representing deviation of the horizontal scanning rate of said electron beam from a desired scanning rate at each of a plurality of horizontal sampling positions along at least one of said horizontal lines, said correction values being obtained from said means for controlling when said at least one horizontal line is scanned by the beam in accordance with said horizontal and vertical beam deflection signals;

reading means for reading said correction values from said memory means and for producing a deflection correction signal in accordance with said correction values being read; and

means for supplying said deflection correction signal to said beam deflection means so that said deviation of the horizontal scanning rate is substantially cancelled.

4,281,341

STEREOSCOPIC TELEVISION SYSTEM

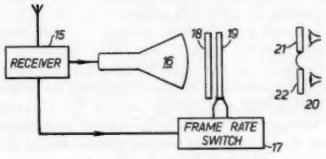
Dennis W. G. Byatt, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Oct. 24, 1979, Ser. No. 88,059

Claims priority, application United Kingdom, Nov. 9, 1978, 43780/78

Int. Cl.³ H04N *9/54*

U.S. Cl. 358—92 **3 Claims**



1. A stereoscopic television system including a stereoscopic television transmission arrangement, said transmission arrangement comprising a stereoscope and a television camera, said camera having a first switchable polariser positioned in its image receiving path which is alternately switchable between two states of optical polarisation, said first switchable polariser comprising a liquid crystal cell and means for transmitting light which is of a pre-determined state of optical polarisation, said liquid cell containing a thin layer of liquid crystal material of the twisted nematic kind; and said stereoscope being comprised of two respective arms, two stereoscope polarisers in mutually crossing relationship, and means for projecting images obtained from both arms on to said first switchable polariser whereby the camera receives images alternately from the respective arms of said stereoscope, each of said stereoscope polarisers being located in a respective one of said arms of the stereoscope.

4,281,342

MARK DETECTING SYSTEM USING IMAGE PICKUP DEVICE

Hirotada Ueda, San Jose, Calif.; Toshikazu Yasue, Hachioji, and Takeshi Uno, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,517

Claims priority, application Japan, Mar. 29, 1978, 53-35493; Apr. 7, 1978, 53-40322; Apr. 7, 1978, 53-40325

Int. Cl.³ H04M *7/18;* **G06F** *15/70;* **G01B** *11/14*

U.S. Cl. 358—93 **35 Claims**

1. A mark detecting system for detecting a light reflective mark provided on an object, comprising:

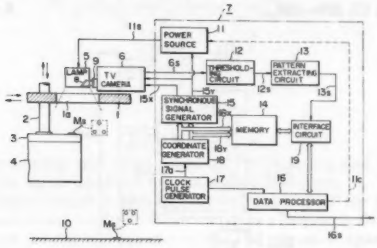
image pickup means for producing a two-dimensional image

of said object on its imaging plane and for scanning said imaging plane to deliver a sequential image signal;

illuminating means for illuminating the field of view of said image pickup means with light of a specified wavelength, said illuminating means including a metal vapor discharge tube and a driving circuit for causing the discharge of said discharge tube by an alternate current which is in synchronism with the scanning of said imaging plane by said image pickup means;

filter means for preventing light of wavelengths other than said specified wavelength from impinging upon said image pickup means; and

a data processing section for processing said image signal to detect a pattern corresponding to said mark.



4,281,343

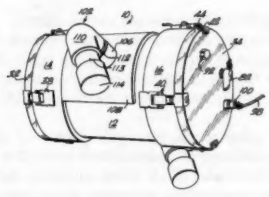
UNDERWATER VIDEO CAMERA HOUSING

George Monteiro, 3338 Devon Rd., Miami, Fla. 33133

Filed Apr. 28, 1980, Ser. No. 144,412

Int. Cl.³ H04N 7/18

U.S. Cl. 358—99 **16 Claims**



1. An underwater video camera housing to receive a video camera for use in transmitting underwater pictures to a video receiver or video tape recorder device located in a remote area, such as on a boat, comprising,

a main generally cylindrical body portion of a predetermined length and diameter and defining a generally cylindrical interior chamber, front and back removable lens means and latch means to secure said front and back lens means in a water-tight closed relation to respective normally open front and back ends of said cylindrical body portion; video camera support means fixed relative to an inside of said back lens means whereby said support means may be selectively positioned within said interior chamber or removed therefrom, said support means being sized for sliding movement into and out of said interior chamber;

adjustable handle means fixed relative to an exterior surface of said cylindrical body portion, and video camera control means extending from control knob means exteriorly of said back lens through said back lens means, in a water-tight relation thereto, into said interior chamber for operable connection to the video camera.

4,281,344

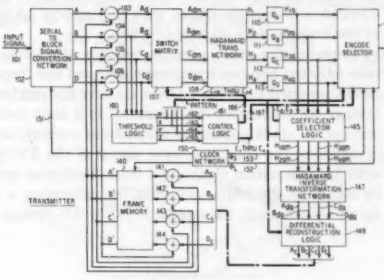
VIDEO INTERFRAME TRANSFORM CODING TECHNIQUE

Frank W. Mounts, Colts Neck, and Arun N. Netravali, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 2, 1980, Ser. No. 146,188

Int. Cl.³ H04N 7/12

U.S. Cl. 358—136 **15 Claims**



1. Apparatus for encoding a series of samples each representing the intensity of an element in a picture, comprising:

a. means (**103–106**) for forming the frame difference for each intensity value in a block of M pels, and

b. means (**108**) for generating N ($N \leqq M$) transform coefficients representing said M frame differences,

CHARACTERIZED IN THAT said apparatus further includes:

c. means (**107**) for altering the value of the frame difference for any pel in said block if said frame difference is small, and

d. means (**125**) for encoding the value of N − K of said coefficients, where K is the number of pels for which said frame difference is small.

4,281,345

SYNCHRONIZATION OF DIGITAL MEMORY WITH TV SIGNAL HAVING INTERLACE

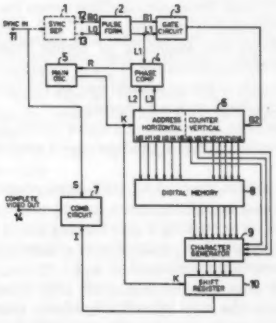
Stefan Wärn, Järfälla, Sweden, assignor to Globe Computers AB, Stockholm, Sweden

Filed Mar. 28, 1980, Ser. No. 135,108

Claims priority, application Sweden, Mar. 30, 1979, 7902862

Int. Cl.³ H04N 5/22, 7/08, 5/04

U.S. Cl. 358—149 **2 Claims**



1. A method for synchronizing a digital memory, such as a memory arranged in a microprocessor or in a display terminal, with an existing TV-system in which a TV-picture is transmitted with video interlace, characterized by the following steps:

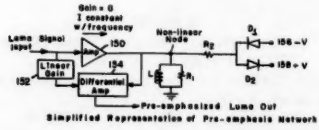
(a) forming and time adjusting field and line synchronizing pulses separated from a composite sync signal of the TV-system;
(b) gating the formed and time adjusted field and line synchronizing pulses in order to generate a corrected field synchronizing pulse, which, in spite of the video interlace, always appears at the starting point of a line;
(c) supplying the corrected field synchronizing pulse to an address counter for the digital memory in order to reset, at the starting point of a picture field, the part of the address counter, which is associated with the vertical addressing of the memory to a starting position;
(d) comparing the phase position between the formed and time adjusted line synchronizing pulses and line frequency pulses supplied from the address counter for producing a voltage for correcting the frequency of a main oscillator utilized for clock control of the address counter; and
(e) combining the composite sync signal of the TV-system with an information signal read from the digital memory by means of the address counter for generating a video signal according to the standards of the TV-system.

4,281,346

COMPLEMENTARY PRE-EMPHASIS AND DE-EMPHASIS CIRCUITS FOR A VIDEO SIGNAL TRANSFER CHANNEL

Caljon H. Strobele, Santa Ana, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 754,757, Dec. 27, 1976, Pat. No. 4,200,889. This application Jul. 12, 1979, Ser. No. 56,896
The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.
Int. Cl.[3] H04N 5/14
U.S. Cl. 358—166 **3 Claims**



Simplified Representation of Pre-emphasis Network

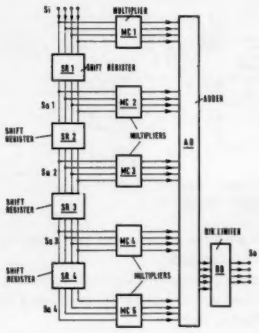
1. In a wide band signal transfer system including a wide band signal transfer channel which is subject to unwanted noise across the wide band, pre-emphasis means for increasing, prior to introduction of said signal into said channel in pre-emphasized form, the amplitude of higher-frequency wide band signal components relative to lower frequency wide band signal components without overdriving of the transfer channel, said pre-emphasis means comprising:
input connections for receiving a signal having a wide band of frequencies within a predetermined amplitude range; and
amplifying means coupled to said input connections, the output of said amplifying means having connected thereto
a network for producing a gain that is a direct function of frequency to a limit, said network comprising an inductance-resistance combination; and
means in shunt connection with said inductance for switching the gain of said amplifying means for the amplitude peaks of said resultant amplified signal which exceed a predetermined magnitude,
whereby the gain of said amplifying means is made a non-linear function of frequency and of the amplitude of the higher frequency components of said wide band signal.

4,281,347

CORRECTION CIRCUIT FOR IMPROVING THE SHARPNESS OF CONTOUR OF VIDEO IMAGES

Gottfried Tschannen, Zürich, Switzerland, assignor to Siemens-Alris AG, Zürich, Switzerland

Filed Feb. 26, 1980, Ser. No. 124,792
Claims priority, application Switzerland, Mar. 8, 1979, 2225/79
Int. Cl.[3] H04N 5/14
U.S. Cl. 358—166 **9 Claims**



1. A correction circuit for improving the contour quality of video images in devices where the video signals are converted into digital form, comprising:
an even number of series connected multi-stage shift registers, each having input means;
a respective multiplier operatively associated with each of the shift registers;
adder means having inputs and an output side;
the input means of the shift registers being connected by their related multipliers with related inputs of the adder means;
each of the shift registers having output means;
a further multiplier for connecting the outputs of the last shift register with further inputs of the adder means;
the multiplier factors of the multipliers constitute a symmetrical series having an absolute maximum at the center of the series;
the absolute value of the multiplier factor of one of said multipliers defining an intermediate multiplier is greater than the actual value of all other multiplier factors;
the sign of the intermediate multiplier factor being opposite to the sign of the algebraic sum of all other multiplier factors; and
a digital limiter circuit connected with the output side of said adder means for limiting the values representative of input signals of the correction circuit such that at an output of the digital limiter circuit there appears either as a multi-bit-video output signal a minimum-grey stage value output signal for input signals whose represented value is smaller than the value of a certain number of grey stages or a maximum-grey stage value-output signal for input signals whose represented value is greater than the value of a predetermined second number of grey stages, and in all other cases the relevant input signal remains unchanged.

4,281,348

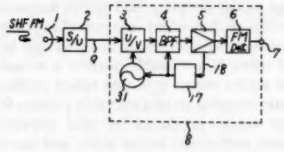
TELEVISION SIGNAL RECEIVING APPARATUS

Osamu Shizuya, Higashi-Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 2, 1979, Ser. No. 63,098
Int. Cl.[3] H04N 5/44
U.S. Cl. 358—188 **6 Claims**

1. In an apparatus for receiving an FM television signal, the

carrier wave thereof being frequency-modulated by a video signal including a synchronizing component and a video component with an amplitude larger than that of said synchronizing component, said apparatus comprising a band-pass filter for selectively taking out said FM television signal with a pass band width corresponding to one channel and an FM detector



for reproducing said video signal by FM-detecting said FM television signal taken out from said band-pass filter,

the improvement is that the center frequency of the pass band of said band-pass filter is set to be a frequency shifted from the center frequency of said FM television signal to the side of an instantaneous frequency modulated by a white level video signal.

4,281,349

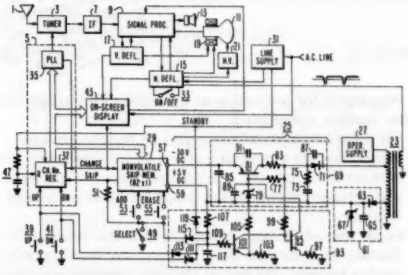
POWER SUPPLY ARRANGEMENT FOR A TUNING SYSTEM

John B. George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1980, Ser. No. 145,317

Int. Cl.³ H04N *5/44*

U.S. Cl. 358—191.1 **13 Claims**



10. In a television receiver including a picture tube for generating an electron beam; signal processing means for generating a video signal for modulating said electron beam; horizontal and vertical deflection means for generating horizontal and vertical deflection signals to deflect said electron beam to form an image; tuning register means for storing binary signals representing a selected channel; channel selection means for changing the binary signals stored in said register means when operated; converter means for converting said binary signals to a tuning voltage; frequency selective means responsive to said tuning voltage for tuning said television receiver to various channels; and channel number display means responsive to said deflection signals for displaying the channel number of said selected channel in a predetermined portion of said image for a display time after said selected channel is selected; apparatus comprising:

power supply means for generating at least one supply voltage for said tuning means in response to one of said deflection signals; and

power supply control means connected to said power supply means and said channel selection means for normally causing the magnitude of said supply voltage to be at a relatively low value and selectively causing the magnitude of said supply voltage to be a relatively high value for a predetermined time longer than said display time after said channel change selection means is operated and thereafter automatically causing the magnitude of said supply voltage to return to said relatively low value.

4,281,350

ACOUSTOELECTRIC DEVICE FOR READING OR PROCESSING A TWO-DIMENSIONAL OPTICAL IMAGE

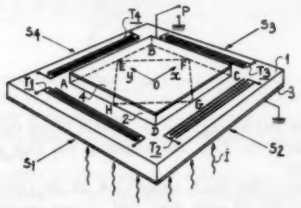
Charles Maerfeld, and Herve Gautier, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 13, 1979, Ser. No. 75,225

Claims priority, application France, Sep. 19, 1978, 78 26817

Int. Cl.³ H04N *5/30*

U.S. Cl. 358—213 **10 Claims**



1. An acoustoelectric device for reading or processing a two-dimensional optical image, comprising a piezoelectric medium carrying four electromechanical transducers for converting an electrical signal into elastic waves which propagate in only two distinct directions at the surface of the piezoelectric medium and reciprocally, a photosensitive medium for receiving the optical image on an interaction surface and for converting the photons constituting the image into electric charges, and an electrically non-linear medium electrically coupled to said photosensitive medium, said elastic waves producing non-linear interaction in said non-linear medium, the amplitude of said interaction depending on the concentration of the electric charges, the output signal of the device being produced by said interactions, the wave vectors of said four elastic waves being such that the vector resulting from the non-linear interaction of three of said waves is equal and opposite to the wave vector of the fourth of said elastic waves.

4,281,351

APPARATUS FOR THE LINE BY LINE OPTICAL SCANNING OF A FILM

Dieter Poetsch, Darmstadt; Werner Becker, Mainz; Ottokar Klein, Weiterstadt, and Rudolf Wulf, Riedstadt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 77,985

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842218

Int. Cl.³ H04N *3/36*

U.S. Cl. 358—214 **14 Claims**

1. In the art of converting the image content of motion picture film, having image frames and marginal portions, to television image signals,

apparatus for the optical scanning of the film frames having a light source (**7**, **51**);

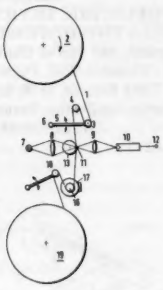
means (**8**, **42**, **50**) in the path of the light from the source for furnishing a beam of light and for directing said beam to the frames of the film;

a sensor (**10**) receiving the beam of light after having passed through the frame, the region between the beam furnishing means and the sensor defining a scanning region;

and means for moving the film through the scanning region, and comprising

means for guiding the film in a predetermined curved path through said scanning region including

means for supporting the film at said marginal portions and outside of the flim frames, located adjacent the scanning



region, and having convex surfaces facing the film, moving with the film, and engaging the film at one side thereof;

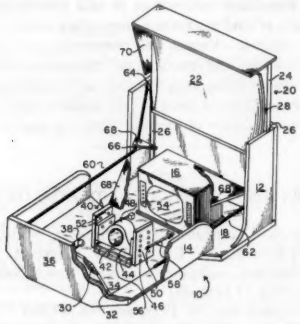
and rotating film guide means (**3, 4, 26, 28**) guiding the film in the curved path over said convex movable surface support means positioned remotely from said scanning region.

4,281,352

COMPACT PROJECTION TELEVISION SYSTEM

Andrew E. Hoffman, 710 Riverside Ave., #1, Santa Cruz, Calif. 95060

Filed Mar. 23, 1979, Ser. No. 23,182
Int. Cl.[3] H04N *5/74*
U.S. Cl. 358—237 **13 Claims**



1. A compact projection television system comprising:

enclosure means including

a fixed portion having a substantially horizontal first surface, and

a movable portion coupled to said fixed portion and having a second surface, said movable portion being movable between a closed position in which said first surface and said second surface are substantially perpendicular and an open position in which said first surface and said second surface are substantially parallel;

television receiver means supported by said first surface and occupying a first volume of space;

screen means coupled to said fixed portion so as to be movable between a raised position and a lowered position, said screen means including

a screen support slidably coupled to said fixed portion so as to be vertically movable between said raised postion and said lowered position,

a screen, and

an adjustable bracket means for attaching said screen to said screen support;

first linkage means coupling said screen means to said movable portion so that when said movable portion is in said closed position said screen means is in said lowered position and when said movable portion is in said open position said screen means is in said raised position;

mirror means coupled to said movable portion for reflecting a picture image produced by said television receiver means onto said screen means when said movable portion is in said open position and

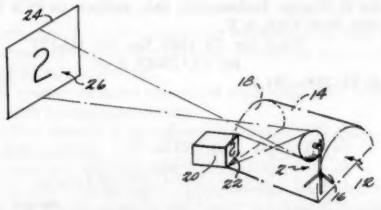
lens means disposed along an optical path between said television receiver means and said mirror means when said movable closure portion is in said open position.

4,281,353

APPARATUS FOR PROJECTING ENLARGED VIDEO IMAGES

Bifford L. Scarborough, Jr., 604 JFK Ct., Suffolk, Va. 23434

Filed Jan. 12, 1979, Ser. No. 3,037
Int. Cl.[3] H04N *5/64*
U.S. Cl. 358—254 **3 Claims**



1. Apparatus for projecting an enlarged video image onto a display surface, comprising:

a television set adjusted to project an inverted image;

a housing having an opening at one end thereof, said television set being located at a bottom portion of the opening and arranged such that the image faces the interior of the housing;

a single optical element located within the housing for reflecting the projected image beyond said housing onto the display surface, said optical element comprising a concave parabolic mirror; and

means for adjusting said mirror to reflect the image through a top portion of said opening onto the display surface.

4,281,354

APPARATUS FOR MAGNETIC RECORDING OF CASUAL EVENTS RELATING TO MOVABLE MEANS

Raffaele Conte, Via S. Barnaba 30, Milano, Italy

Filed May 17, 1979, Ser. No. 40,036
Claims priority, application Italy, May 19, 1979, 23605 A/78
Int. Cl.[3] H04N *7/18*
U.S. Cl. 360—5 **5 Claims**

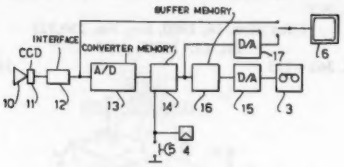
1. An apparatus for video surveillance of the environment about a vehicle, said apparatus comprising:

(a) scanning means, mountable on said vehicle, for scanning said environment and converting images of said environment to electric signals;

(b) storage means for receiving and storing said signals, said storage means having a specific storage capacity and being adapted to update stored signals when said storage capacity is full, whereby said updating is effected by superposition of newly received signals upon the oldest

stored signals to thereby erase said oldest stored signals; and

(c) Sensor means, mountable on said vehicle, for sensing



specified changes in travel of said vehicle and, in response to said sensed changes, automatically preventing said updating of said storage means to provide fixed storage signals.

4,281,355
DIGITAL AUDIO SIGNAL RECORDER

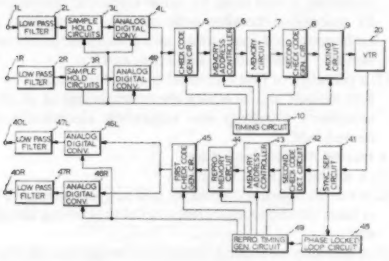
Ryoichi Wada, Habikino; Mitsuharu Tsuchiya, Katano; Kanji Odagi, Neyagawa, and Takanori Senoo, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 29, 1979, Ser. No. 7,851

Claims priority, application Japan, Feb. 1, 1978, 53-10980; Feb. 2, 1978, 53-11275

Int. Cl.³ G11B *5/00, 5/09*

U.S. Cl. 360—32 **13 Claims**



1. A digital audio signal recorder for digitallizing analog signals in an audio frequency band to pulse-code-modulated signals and for recording the digitallized signals on a recording medium, the recorder comprising: first check code generating means for producing a first check code signal by the sume of module 2 per bit of signals for individual pieces of digitallized data sampled at a given time; memory means connected to said first check code generating means for receiving the output of signals for said pieces of data in a set of signals for the set of pieces constituted by the individual pieces of sampled data and said first check code at addresses in said memory means spaces from each other along a time axis by a time interval greater than the expected time interval of the dropped-out signal; second check code generating means connected to said memory means and for producing a second check code signal and adding it to the signals of said set; and a recording means connected to said second check code generating means for receiving the output from said second check code generating meand and recording it on a recording medium.

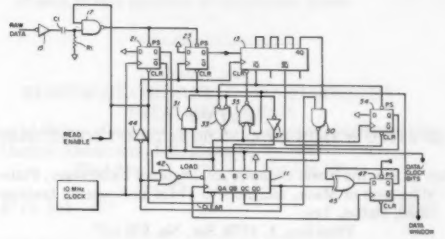
4,281,356
MAGNETIC DISK MEMORY

Frank E. Sousa, Pelham, N.H., assignor to R. C. Sanders Technology Systems, Inc., Amherst, N.H.

Filed Nov. 28, 1979, Ser. No. 98,347

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—45 **12 Claims**



1. In apparatus for reading binary data serially recorded on magnetic media at a high density tending to produce bit shifting, there being a nominal time interval between possible bit positions during readback, the improvement of an adaptive time base comprising:

means providing a clock signal at a frequency which is a large multiple of the frequency corresponding to said nominal interval;

a presettable counter which can be stepped by said clock signal;

means for generating a data window signal, which means includes means for complementing the state of said data window signal at the end of a count sequence of said counter;

a shift register; and

means, operative in response to a bit received from the media, for loading said counter and for entering a bit corresponding to the received bit into said shift register, said means being also operative, at the end of each count sequence, for loading into said counter a value which is a function of the state of said shift register and for advancing the state of said shift register.

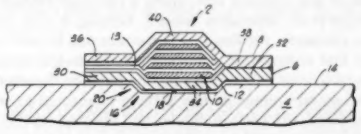
4,281,357
THIN FILM MAGNETIC HEAD AND METHOD OF MAKING THE SAME

Fred S. Lee, Oklahoma City, Okla., assignor to Magnex Corporation, San Jose, Calif.

Filed Sep. 10, 1979, Ser. No. 74,246

Int. Cl.³ G11B *5/20*

U.S. Cl. 360—125 **13 Claims**



1. A thin film magnetic head comprising:

a substrate having a top surface;

a first layer of magnetic film having a first front gap portion, a first back gap portion, and a first offset portion extending between said first front gap and said first back gap, said first offset portion defining a first sloping surface disposed in angular relationship to said top surface;

a second layer of magnetic film having a second front gap portion disposed in aligned spaced relation to said first front gap portion, a second back gap portion disposed adjacent said first back gap portion, and a second offset

portion, said second offset portion defining a second sloping surface disposed in angular relationship to said top surface and in spaced relation to said first sloping surface so that a cavity is defined between said first and second sloping surfaces; and

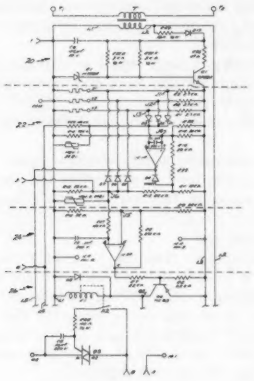
a layer of electrically conductive material disposed within said cavity.

4,281,358

MULTIFUNCTION DYNAMOELECTRIC PROTECTION SYSTEM

Leo A. Plouffe, North Dighton, and Diethard Unterweger, Plainville, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 1, 1978, Ser. No. 939,087
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—22 **28 Claims**



13. A protection system for a deynamoelectric machine comprising

a source of power and switching means for switching the power to and from the dynamoelectric machine,

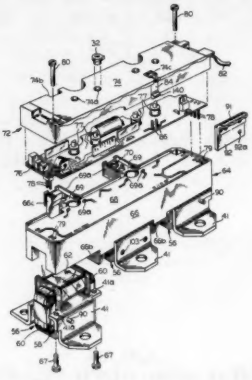
control means adapted to control the switching mmeans comprising first and second voltage comparators each having two inputs and an output, a source of d.c. power, a first voltage divider connected between the d.c. power source and common comprising a reference resistor and a temperature dependent resistor forming a first junction therebetween, the first junction connected to one input of the first comparator, a second voltage divider ccomprising two resistors forming a second junction therebetween, the second voltage divider serially connected to another resistance, the voltage divider and the said another resistor connected between the d.c. power source and common, the second junction connected to one input of the second comparator, reference voltage means connected to the other inputs of the first and second comparators, a diode coupled between the first and second junctions, the output of first comparator connected to a point between the second voltage divider and the said another resistance, so that upon a selected change in temperature and concomitant change in resistance of the temperature dependent resistor or upon shorting of the temperature dependent resistor, the output of the second comparator will switch and cause the switching means to interrupt power to the machine.

4,281,359

STATIC TRIP UNIT FOR MOLDED CASE CIRCUIT BREAKERS

Eric W. Bayer, Wolcott, and Edward A. Palmisano, Simsbury, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,321
Int. Cl.³ H02B *1/18*
U.S. Cl. 361—115 **14 Claims**



1. A multi-pole solid state trip unit structured to be replaceably mounted within the molded case of a multi-pole industrial circuit breaker, said solid state trip unit comprising, in combination:

A. a first module including

(1) a first support structure

(2) a separate current transformer sub-assembly for each breaker pole secured to said first support structure and including a load strap for serial electrical connection in its associated breaker pole circuit, a magnetic core embracing said load strap, and a multi-turn secondary winding wound about said core, and

(3) a plurality of first electrical connectors carried by said first module and to which the terminations of all of said secondary windings are separately electrically connected; and

B. a second module including

(1) a second support structure

(2) a circuit board mounted by said support structure and, in turn, mounting electronic signal processing circuitry, and

(3) a plurality of second electrical connectors electrically connected with said signal processing circuitry and supported by said second module and individually mating with said first connectors and thus electrically connecting said secondary windings into said signal processing circuitry.

4,281,360

HIGH-VOLTAGE CAPACITOR

Robert F. Brehse, Fort Wayne, Ind., assignor to General Electric Company, Salem, Va.

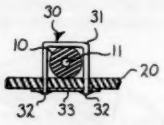
Filed Dec. 17, 1979, Ser. No. 104,672
Int. Cl.³ H01G *1/035*
U.S. Cl. 361—303 **2 Claims**

1. A high-voltage capacitor comprising:

a length of high-voltage insulated lead cable having a center conductor adapted for connection to a source of high-voltage, the center conductor further serving as a first capacitor plate;

a base member comprising a flat insulating sheet having a plurality of apertures therethrough; and

a conductive envelope surrounding the cable for a predetermined distance along the length thereof, the conductive envelope serving as a second capacitor plate and being fixedly secured to the base member, said conductive envelope including two parts, the first part being an elongated generally U-shaped metallic component provided with



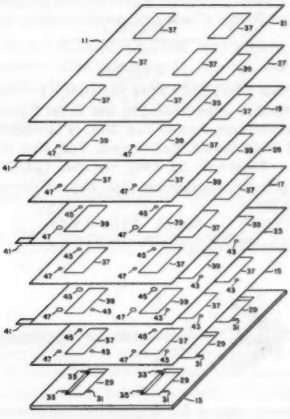
tabs extending from the sides of the U, the second part being a conductive plate on the underside of the flat insulating sheet, the tabs being arranged to project through corresponding ones of said apertures so as to make electrical contact with the conductive plate, the tabs and the conductive plate being soldered together for electrical continuity and mechanical connection.

4,281,361

SIMPLIFIED MULTILAYER CIRCUIT BOARD

Benjamin W. Patz, Orlando; Herbert Berke, Maitland, and Donald R. Mendorf, Altamonte Springs, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 17, 1980, Ser. No. 130,804
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—401 **10 Claims**



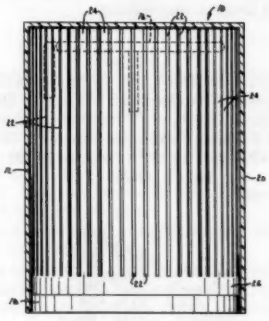
1. A multilayer circuit board comprising, in combination:
a mounting board having a plurality of rectangular shaped apertures therein, each aperture of which has a plurality of voltage connector terminals attached to the edge thereof, said voltage connector terminals extending along the upper surface of said mounting board;
a plurality of dielectric sheets stacked upon the upper surface of said mounting board, each of which has therein a plurality of rectangular shaped apertures in alignment with the rectangular shaped apertures of said mounting board;
a plurality of conductive sheets, each of which is positioned between a pair of adjacent dielectric sheets and each of which has located therein a plurality of rectangular shaped apertures in alignment with the rectangular shaped apertures of said mounting board;
a plurality of holes extending from the upper surface of said mounting board to individual conductive sheets at each appropriate connection point thereof, said plurality of holes being in alignment with the voltage connector terminals of the rectangular shaped apertures of said mounting board; and
a plurality of conductive discs, each of which is inserted into one of said plurality of holes so as to connect the voltage connector terminals of the rectangular shaped apertures of said mounting board to the appropriate connection points of each of said plurality of conductive sheets.

4,281,362

ELECTROSTATIC SHIELD FOR DIATHERMY TREATMENT HEAD

Fred M. Berry, Johnson County, Mo., assignor to International Medical Electronics, Ltd., Kansas City, Mo.

Filed Mar. 31, 1980, Ser. No. 136,101
Int. Cl.³ A61N *1/06*
U.S. Cl. 361—437 **5 Claims**



1. An electrostatic shield for use with a shortwave diathermy apparatus having a diathermy applicator head, said shield adapted to be placed between the diathermy applicator head having a current carrying coil located therein and the body of the patient being treated, said shield comprising:
a first plurality of electrically conductive strips which are arranged to substantially surround said current carrying coil; and
a second plurality of electrically conductive strips wherein each of said second plurality of electrically conducted strips is electrically coupled with one strip of said first plurality of electrically conducted strips, said second plurality of electrically conductive strips being arranged to define a plane that is substantially parallel to the plane of said coil.

4,281,363

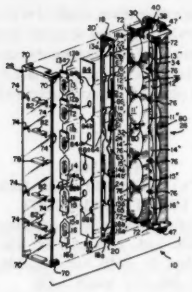
MULTILAMP PHOTOFLASH UNIT WITH REFLECTIVE-PROTECTIVE CIRCUIT BOARD ELEMENT

David W. Mecone; Donald W. Hartman, and Donald E. Armstrong, all of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 29, 1979, Ser. No. 98,458
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—6 **8 Claims**

1. A multilamp photoflash unit comprising, in combination, a printed circuit board having lamp-firing circuitry on a surface thereof, an array of electrically ignitable flashlamps positioned over said surface and having lead-in wires connected to said circuitry, and a flat sheet of material secured to said circuit

board and interposed between said lamps and said circuitry for reflecting heat and light away from said circuit board and



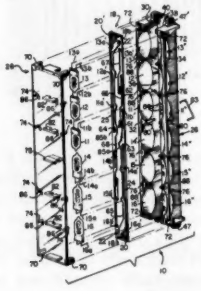
insulating at least portions of said circuitry from the radiant output of said lamps during flashing.

4,281,364

MULTILAMP PHOTOFLASH UNIT CONSTRUCTION

Randall H. LeFever, Williamsport; William J. Harvey, Trout Run, and Glen E. Flook, Jr., Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 12, 1979, Ser. No. 84,235
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—10 **8 Claims**



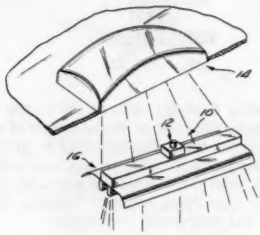
1. A multilamp photoflash unit comprising, in combination, a printed circuit board having lamp-firming circuitry on a surface thereof, an array of electrically ignitable flashlamps disposed on said circuit board, each of said flashlamps having a pair of lead-in wires connected to said circuitry, said circuitry including a common circuit conductor run on said surface of the circuit board connected electrically to one lead-in wire of each of said array of lamps, a housing member having a channel within which said printed circuit board is located, said circuit board being disposed substantially parallel to a wall of said channel with said wall facing the opposite side of said circuit board from said surface thereof, a light-transmitting cover panel attached to said housing member and enclosing said flashlamps therein, and a staple of conductive material having a pair of legs extending through both said wall of said housing channel and said circuit board and having a center region positioned on the exterior of said housing on the side of said channel wall opposite that facing the circuit board, said legs being bent over said surface of the circuit board so as to secure said circuit board to said wall of said housing channel by means of said staple, with at least one of said legs of the staple being in contact with said common circuit conductor run, whereby said staple provides electrostatic protection by extending electrical ground to the exterior of the unit.

4,281,365

VARIABLE PHOTOELECTRIC CELL

Robert L. Elving, 1315 E. Romneya, Anaheim, Calif. 92805, and Randolph S. Carlson, Irvine, Calif., assignors to Robert L. Elving, Anaheim, Calif.

Filed Sep. 25, 1979, Ser. No. 78,886
Int. Cl.³ F21V *19/04*
U.S. Cl. 362—20 **27 Claims**



1. An illumination control device for regulating illumination in a controlled lighting area, including both natural and artificial lighting, comprising:

means for turning on an artificial light when the amount of natural light entering said controlled lighting area reaches a first predetermined level;

means for turning off said artificial light when said natural light reaches a second predetermined level;

first means for adjusting said first predetermined level; and

second means for adjusting said second predetermined level independently of said first predetermined level.

4,281,366

LIGHTING SYSTEMS FOR SURGICAL OPERATIONS

Helmut Wurster, Oberderdingen, and Ernst Blanc, Oberderdingen-Gross-Villars, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlengen, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,075
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 7906381
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—32 **5 Claims**

1. A lighting system for surgical examinations and comprising an optical fibre bundle having an intake area into which the light of an ellipsoidal mirror lamp can be beamed, wherein a concave lens area located in the area facing away from said optical fibre bundle is co-axially situated forwardly adjacent said light intake area of said optical fibre bundle.

4,281,367

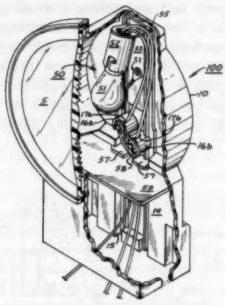
SUBMERSIBLE LAMP WIRING TERMINALS

Dennis G. Moore, 576 Debra, Livermore, Calif. 94550, and Lawrence N. Johnson, 130 W. High St., Spokane, Wash. 99203

Filed Jun. 4, 1979, Ser. No. 44,923
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—96 **7 Claims**

1. In a submersible electric lamp having a housing defining an enclosure for retaining a predetermined volume of air and an opening formed in said housing through which liquid may pass such that upon submersion of said housing in liquid to a

level below said opening formed therein said predetermined volume of air will be compressed creating a force sufficient to prevent the liquid which may pass within said housing from rising above a predetermined level, and an electric lamp carried within said housing above said predetermined level and having electrical leads for coupling said electric lamp to a source of illuminating electrical energy for lighting said electrical lamp, the improvement comprising



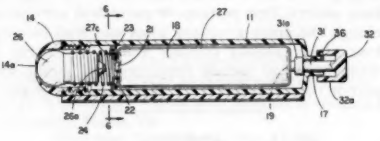
terminal coupling means carried within said lamp housing at a position above said predetermined level to which liquid will rise therein for electrically coupling said electrical leads to a source of illuminating electrical energy and thereby preventing contact of the coupling with the liquid when submerged therein.

4,281,368

KEYHOLE ILLUMINATING APPARATUS

A. Robert Humbert, 5514 S. Adams St., Marion, Ind. 45952

Filed Nov. 2, 1979, Ser. No. 90,681
Int. Cl.³ E05B *17/10*
U.S. Cl. 362—100 **8 Claims**



1. A keyhole illumination apparatus comprising an elongated tubular housing adapted for mounting on a surface adjacent a keyhole, a translucent closure cap removably fastened in one end of said housing and an axially moveable actuating member extending from the other end of the housing, a cylindrical battery within the housing having a central positive terminal stud at one end with its opposite end wall forming the negative terminal, an annular retainer disc encircling said positive terminal stud, an electrically conductive thin metal strap overlying and extending from said opposite end wall of the battery to said disc and anchored to the disc with a portion of the strap exposed at the face of the disc remote from the battery, a helical wire compression spring carrying at one end an electrical bulb having positive and negative terminals, said spring extending within said housing bottomed on said disc and electrically contacting the negative bulb terminal and said exposed portion of the conductive strap, the positive bulb terminal at the base of the bulb being aligned with said central positive battery terminal, said spring being stressed so that it exerts an axial force urging said battery toward said other end of the housing and said bulb against said closure cap, depression of said actuating member bodily moving said battery against the force exerted by said spring and engaging the positive terminals of the bulb and battery to energize the bulb.

4,281,369

METHOD AND APPARATUS FOR SOLAR POWER LIGHTING

Christopher L. Batte, 7816 Purdue, Dallas, Tex. 75225

Filed Dec. 11, 1978, Ser. No. 967,962
Int. Cl.³ F21M *5/02*; F21P *1/00*
U.S. Cl. 362—183 **7 Claims**

1. An improved lighting system illuminating an area in times of darkness of the type having an upstanding light pole of generally hollow interior construction extending from an underlying base secured upon the ground for supporting a plurality of light emitting elements thereabove wherein the improvement comprises:

a remotely disposed, moveable solar collector panel disposed about said light pole;

a tracking mechanism for orientating said collector panels relative to the sun;

a plurality of storage batteries secured to said lighting pole;

means coupling said storage batteries to said collector panel or the energization of said batteries therefrom;

means interconnecting said storage batteries to said light emitting elements for the energization thereof; and

control means secured to said light pole for interconnecting said collector panel to said batteries and said batteries to said light emitting element in response to the amount of sunlight falling on said collector panels; and

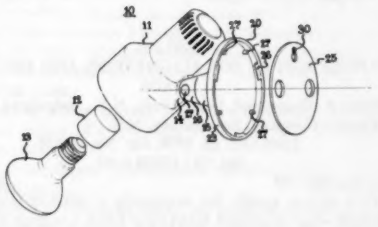
a conveyor elevator within said light pole housing said storage batteries therein, said light pole including an entry door for providing access to said storage batteries upon said conveyor elevator.

4,281,370

SWIVEL BASE LIGHTING FIXTURE

John H. Masenheimer, Prospect, Ky., and Irving Bradley, Novelty, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 7, 1979, Ser. No. 64,403
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—287 **8 Claims**



1. A swivel-base lighting fixture comprising:

a lamp,

a socket,

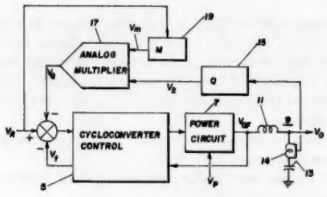
a housing for at least partially enclosing the said lamp and socket,
an inner base,
an outer base,
a connecting arm for supportively attaching said housing to said outer base,
said outer base at least partially surrounding and recessing said inner base and having a means for retaining said inner base therein,
the interior of said outer base and the exterior of said inner base being cooperatively configured to permit rotational movement therebetween,
wherein said inner base engages said outer base to secure the angular position of said fixture.

4,281,371

CYCLOCONVERTER WITH WAVEFORM IMPROVING NONLINEAR FEEDBACK

Donal E. Baker, American Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1980, Ser. No. 127,601
Int. Cl.[3] H02P *13/30;* **H02M** *5/27*
U.S. Cl. 363—10 **8 Claims**



1. Apparatus for synthesizing from a multiphase AC source voltage an output waveform which follows an AC reference waveform comprising:
a naturally commutated thyristor power circuit connected across the multiphase AC source;
a control circuit for sequentially firing the thyristors in said power circuit at firing angles determined as a function of an AC control signal to generate an unfiltered output voltage from said power circuit;
an output filter for generating a filtered output voltage from said unfiltered output voltage; and
a feedback circuit comprising
(a) means for generating a feedback signal proportional to the filtered output voltage,
(b) means for generating a compensating signal having a magnitude which varies as a function of said firing angle,
(c) means for multiplying said feedback signal by said compensating signal to generate a compensated feedback signal, and
(d) means for summing said compensated feedback signal in opposition with said reference waveform to generate said control signal.

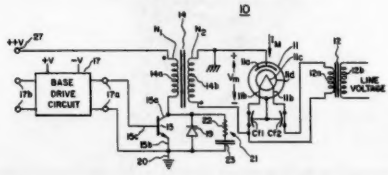
4,281,372

POWER SUPPLY FOR MAGNETRON AND THE LIKE LOADS

William P. Kornrumpf, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,826
Int. Cl.[3] H05B *6/68*
U.S. Cl. 363—20 **10 Claims**

1. A power supply for energizing a self-rectifying load, through which a current flows only when a voltage of predetermined polarity and magnitude is exceeded thereacross, comprising:
source means for providing an operating potential;
a transformer having a single high-voltage secondary winding connected directly across said load and having an untapped primary winding having a mutual inductance to said secondary winding;
a switching device having a controlled-current path coupled, as the only controllable device, in electrical series connection with said transformer primary winding across the operating potential of said source means, said switching device having an input terminal for receiving a periodic signal controlling the flow of current in said controlled-current path and said primary winding;
unidirectional current flow means connected in parallel with said controlled-current path of said switching device for conducting to prevent a flow of current through the controlled-current path of said switching device in a reverse direction and for preventing application of voltages of improper polarity across said switching device;



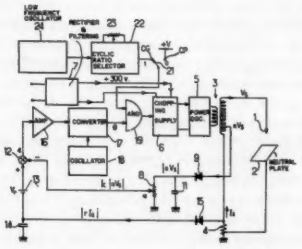
an electrical capacitance effectively connected in parallel across the mutual inductance of said transformer and resonant therewith at a predetermined first frequency; and
circuit means for driving the input of said switching device with said periodic signal of magnitude sufficient to cause said controlled-current path to heavily conduct a flow of current therethrough commencing while said unidirectional current flow means is conducting and continuing during a first portion of a predetermined time interval; said circuit means providing said periodic signal at a second frequency less than said first frequency and causing said signal to terminate to abruptly end the flow of current through said controlled-current path at the end of said time interval first portion, to cause said capacitance to charge and apply a voltage aross said load causing said load to periodically conduct a flow of current therethrough at said second frequency and during another portion of said time interval after said first portion.

4,281,373

HIGH FREQUENCY VOLTAGE GENERATOR

Pierre Mabille, Bordeaux, France, assignor to Societe SATELEC, Talence, France

Filed May 16, 1978, Ser. No. 906,556
Claims priority, application France, May 18, 1977, 77 15246
Int. Cl.[3] A61B *17/36;* **H02M** *3/335, 7/537*
U.S. Cl. 363—21 **7 Claims**



1. A high frequency voltage generator, usable in particular in surgery for supplying an electric bistoury or lancet, comprising a rectifying and filtering stage connected to electric mains

supply, a high frequency power oscillator, an output transformer supplied by said high frequency power oscillator, a chopping supply connected to said high frequency oscillator and connected to the output of said rectifying and filtering stage, the chopping frequency of said chopping supply being much higher than that of said mains supply, an error detector having two inputs, means for applying to a first input of said error detector a first signal corresponding to information relative to the voltage taken from the output transformer of the high frequency oscillator, means for applying to the second input of said error detector a second signal corresponding to information relative to the current of the high frequency power oscillator, said error detector being connected to the chopping supply to control said chopping supply;

first and second regulation loops respectively connected to said first and said second inputs of said error detector, said first regulation loop providing for the servo-control of the output voltage from said output transformer while said second loop provides a positive feedback proportional to current in a tissue to be cut which increases the reference voltage of the output voltage proportionally to the output current, said two servo-control loop rendering the output impedance of the generator negative;

said first regulation loop extending between an intermediate point of the secondary winding of said output transformer and said first input of said error detector and comprising a first potentiometer for adjusting the output power, said second regulation loop comprising a circuit through which passes a current proportional to the output current and connected to a pole of a source of voltage, the other pole of which is connected to the second input of said error detector and which supplies a reference voltage; and

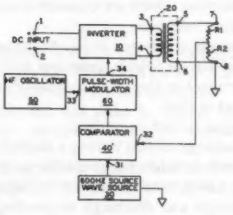
a first transistor constituting a monostable multivibrator, a second transistor triggering said first transistor at each beginning of alternation, a third transistor from the collector of which are taken pulses controlling said chopping supply and which are interrupted by said second transistor, and a second potentiometer connected so as to continuously to vary the time during which said chopping supply control pulses are interrupted, from long interruptions in the case of strong coagulation to the total absence of interruption in the case of a pure cut.

4,281,374

ELECTRICAL CIRCUIT FOR PRODUCING CONTROLLED HIGH VOLTAGE AC OUTPUT

William R. Archer, Fort Wayne, Ind., assignor to General Electric Company, Salem, Va.

Filed May 29, 1979, Ser. No. 42,766
Int. Cl.³ H02M 1/12
U.S. Cl. 363—41 **3 Claims**



1. A power supply for producing high voltage AC output power at a relatively low base frquency from relatively low voltage DC input power, comprising:

a pulse-width modulated inverter for converting the DC input power to a pulse width modulated power signal, said inverter chopping the DC input power at a frequency relatively high with respect to the base frequency;

a voltage step-up transformer having high inductive and capacitive reactance at the chopping frequency, said transformer including a primary winding connected to said inverter for receiving said power signal and a secondary winding for developing the high-voltage AC output power, the reactance of said transformer serving to filter the high-frequency component of said power signal while raising to high voltage the base frequency component of said power signal;

means for sensing the voltage magnitude of said AC output power and for generating a voltage signal representative thereof;

a reference voltage source for producing a reference voltage representative of a desired voltage magnitude of the AC output power; and

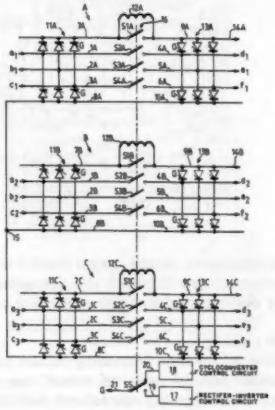
means for comparing said voltage signal to said reference voltage, said comparing means providing a signal to said inverter for varying the duty cycle of said power signal as a function of the difference between the magnitude of said reference voltage and the magnitude of said voltage signal thereby to adjust said voltage magnitude of said AC output power in a manner to minimize said difference.

4,281,375

STATIC FREQUENCY CONVERTER

Jean-Paul Pouillange, Aulnay-sous-Bois, France, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Jan. 15, 1980, Ser. No. 112,236
Claims priority, application France, Jan. 29, 1979, 79 02174
Int. Cl.³ H02M 5/27
U.S. Cl. 363—37 **8 Claims**



1. A natural commutation static frequency converter intended particularly for supplying a synchronous motor, comprising:

a polyphase cycloconverter having a control circuit, said polyphase cycloconverter comprising n monophase cycloconverters each having two reversed Graetz bridges, said Graetz bridges having inputs interconnected and a pair of outputs also interconnected, one of the outputs of each monophase cycloconverter being connected to a neutral point;

at least one self-inductance connected in series between the other output of said Graetz bridges of each monophase converter;

at least one natural commutation rectifier-inverter control circuit; and

commutation switching means for enabling breaking of the connections between the inputs to the two Graetz bridges of at least one of monophase cycloconverters, as well as of the outputs of said bridges which are not connected to the neutral point such that said self-inductance is inserted

between the opened Graetz bridge outputs not connected to said neutral point, said commutation switching means resulting in replacement of the cycloconverter control circuit with said natural commutation rectifier-inverter control circuit so as to form at least one natural commutation rectifier-inverter, said commutation switching means further enabling replacement of Graetz bridge outputs not connected to said neutral point of the polyphase converter with outputs of at least one rectifier-inverter so formed.

4,281,376
PROTECTED CONVERTER ARRANGEMENT

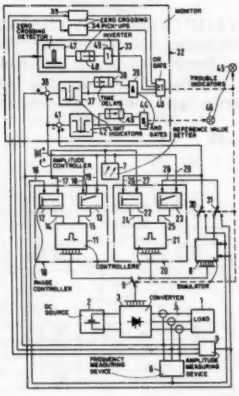
Eberhard Münchow, Nuremberg; Paul Mourick, Hausen, and Jürgen Strop, Langensendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,462

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827443

Int. Cl.³ H02J 9/06

U.S. Cl. 363—50 **3 Claims**



1. A power converter, secure against breakdown, having an electronic power circuit in which the controlled valves are addressed by electronic information processing circuits, comprising:

(a) a single electronic power circuit;

(b) redundant information processing circuits having at least two parallel control units, of which one controls the power circuits as leading control and another operates in standby condition; and

(c) a monitoring device coupled to the control units which, in the event of a disturbance in the leading control unit, switches control of the power circuit to a standby unit.

4,281,377
POWER SUPPLY CIRCUITS

Kenneth S. Evans, Blackpool, England, assignor to Lucas Industries Limited, Birmingham, England

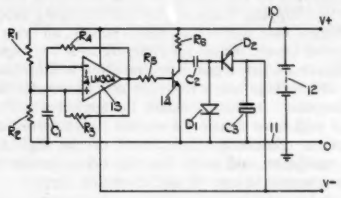
Filed Jun. 11, 1979, Ser. No. 47,315

Claims priority, application United Kingdom, Jun. 21, 1978, 27506/78

Int. Cl.³ H02M 3/18

U.S. Cl. 363—63 **5 Claims**

1. A power supply circuit comprising first and second power supply rails for connection to opposite poles of a power supply, an oscillator including an operational amplifier having first and second supply terminals, a buffer amplifier connected across said first and second rails and connected to be driven by the output of said operational amplifier and a diode pump circuit connected between the output of said buffer amplifier and said second rail, characterized in that the first and second supply terminals of the operational amplifier are connected to said



first rail and the output terminal of the pump circuit, respectively.

4,281,378
FREQUENCY INVERTER

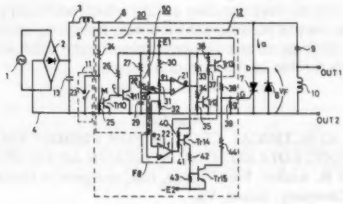
Yoshio Ogino, Nishinomiya; Takumi Mizukawa, Neyagawa, and Hirokazu Yoshida, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 22, 1979, Ser. No. 51,202

Claims priority, application Japan, Jun. 30, 1978, 53-79902

Int. Cl.³ H02P 13/18

U.S. Cl. 363—96 **4 Claims**



1. A frequency inverter comprising:

a thyristor connected across a positive feed line and a negative feed line, a resonance circuit comprising an inductor and a condenser which are connected across said positive and negative feed lines,

a diode inversely connected in parallel to said thyristor, and

a gate signal circuit which generates gate signals from its output terminal to the gate terminal of said thyristor,

characterized in that

said gate signal circuit comprises

a charge-discharge circuit having a second condenser and a resistor branch, said charge-discharge circuit being connected to a switching circuit for making said second condenser charge and discharge responding to the voltage across the anode and the cathode of the thyristor,

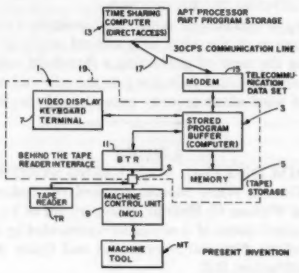
a first comparator circuit which compares output signals of said charge-discharge circuit with a first predetermined reference voltage and generates positive signals of specified timings to said output terminal, and

a second comparator circuit which compares output signals of said charge-discharge circuit with a second predetermined reference voltage and generates negative signals to said output terminal with timings different from those of said specified timings of said positive signals.

4,281,379
COMPUTER DRIVEN CONTROL SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

Len S. Austin, Madison County, Ill., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Dec. 18, 1978, Ser. No. 970,163
Int. Cl.³ G06F *15/16, 15/46;* G05B *19/417*
U.S. Cl. 364—102 **15 Claims**

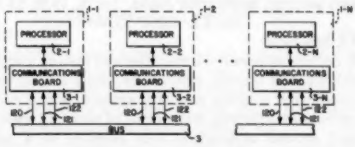


1. In a numerically controlled machine tool including a machine control unit for controlling operation of the numerically controlled machine tool, a general purpose computer for providing operating commands to said machine control unit, said general purpose computer including means for generating a control program, the improvement which comprises a control system interposed between said general purpose computer and said machine control unit, and means for linking said control system to said general purpose computer to enable said control system to access said computer on a time sharing basis to receive said control program for said machine tool, said control system including an individual computer dedicated to said numerically controlled machine tool, said dedicated computer being connected to said machine control unit and being linked to said general computer on a time sharing basis, a storage memory operatively connected to said dedicated computer, a peripheral input/output device connected to said dedicated computer and located proximate to the numerically controlled machine tool, said dedicated computer being interfaced with said machine control unit so as to provide an input directly to the machine control unit so that said dedicated computer functions as a control data buffer for said machine control unit, said input/output device enabling an operator to modify the control program held in the storage memory of said dedicated computer from a location proximate said machine tool and to update the control program in said general purpose computer on a time sharing basis.

4,281,380
BUS COLLISION AVOIDANCE SYSTEM FOR DISTRIBUTED NETWORK DATA PROCESSING COMMUNICATIONS SYSTEM

Nicanor P. DeMesa, III, and John E. Laabs, both of North Stonington, Conn., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 27, 1978, Ser. No. 973,684
Int. Cl.³ G06F *15/16;* H04Q *3/00;* H04J *3/00*
U.S. Cl. 364—200 **39 Claims**



1. In a digital data communication network wherein a plurality of processor devices are indirectly coupled to a communication bus over which messages between respective devices are transmitted, a system for preventing simultaneous transmission of messages by plural ones of said devices and thereby avoiding a transmission collision on said bus comprising:

first means, coupled with a respective device and responsive to a request for a transmission from its processor, for causing a bus seizure representative signal to be placed on said bus and to thereby be supplied to each of the devices coupled to the bus;

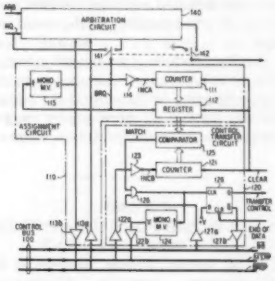
second means, coupled to said bus and coupled to and responsive to the operation of said first means, for examining said bus for the presence of a bus seizure representative signal that has been placed on the bus by another device; and

third means, coupled to said second means, said bus and said device, for causing said device to transmit a message over said bus in response to said second means finding that no bus seizure signal has been placed on the bus by another device, but otherwise inhibiting said device from proceeding with the transmission of a message.

4,281,381
DISTRIBUTED FIRST-COME FIRST-SERVED BUS ALLOCATION APPARATUS

Sudhir R. Ahuja, Matawan, and Dhiraj K. Sharma, Gillette, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 14, 1979, Ser. No. 38,834
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **6 Claims**



1. A first-come first-served resource allocation system in which a plurality of devices share a common resource, each device being adapted for requesting control of said resource and for relinquishing control of said resource, said system including means (**110, 140, 141, 142**) for establishing an ordinal ranking among successive ones of said devices requesting control of said resource and means (**120**) responsive to relinquishment of control of the resource by a device contiguous in said ordinal ranking with an individual one of said devices for transferring control of said resource to the individual one of said requesting devices, said rank establishing means (**110, 140, 141, 142**) characterized by,

first means (**111**) for storing an indicium of an unassigned ordinal position,

separate means (**112**) associated with respective ones of said devices responsive to a request for control of said resource by one of said devices for assigning to that same device the indicium of the unassigned ordinal position currently stored in said first storing means (**111**), and

first means (**113*a*, 113*b*, 114, 115**) responsive to each request for control of said resource by any of said devices for changing the indicium of the assigned ordinal position in said first storing means (**111**) to the indicium of the next unassigned ordinal position,

wherein the rank establishing means operates independent from and concurrent with the means for transferring control of the resource thereby allowing control to be transferred from one device relinquishing control of the resource to the requesting device with minimal delay.

4,281,382

RADIATION SIGNAL PROCESSING SYSTEM

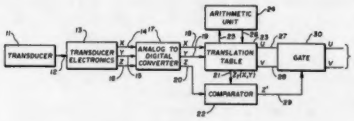
Glenn F. Knoll, Ann Arbor; Donald R. Strange, Howell, and Matthew C. Bennett, Jr., Ann Arbor, all of Mich., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 862,889, Dec. 21, 1977, Pat. No. 4,212,061. This application Dec. 3, 1979, Ser. No. 99,691

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.[3] **G06F** *7/38;* **G01T** *1/20*

U.S. Cl. 364—414 **13 Claims**



1. An improved signal processing system for radiation imaging apparatus, comprising:

a radiation transducer producing transducer signals proportional to the energy content of detected radiation events;

means for storing one or more selected energy limiting values as a function of event spatial coordinates;

means for comparing the energy content of the transducer signals of the detected radiation events to the limiting value or values corresponding to the event spatial coordinates; and

output means for producing an output signal, said output means responsive to said transducer signals and to said means for comparing, so that only those transducer signals corresponding to one or more energy ranges related to said limiting value or values contribute to form said output signal.

4,281,383

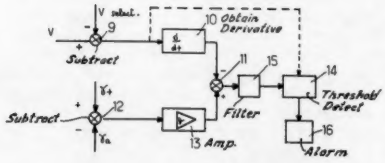
PROCESS AND SYSTEM FOR THE RAPID DETECTION OF A WIND GRADIENT

Jean-Louis Lebrun, Antony, France, assignor to Societe Francaise d'Equipements pour la Navigatior Aerienne (S.F.E.N.A.), France

Continuation of Ser. No. 750,245, Dec. 13, 1976, abandoned. This application Sep. 27, 1979, Ser. No. 79,517

Int. Cl.[3] **G06G** *7/70;* **G05D** *1/12*

U.S. Cl. 364—428 **10 Claims**



1. A process for rapidly detecting wind shear taking into account vertical and horizontal wind components, without requiring a direct measure of ground speed, comprising:

a. determining the rate of change of air speed of the aircraft;

b. determining the actual flight path angle of the aircraft;

c. determining the acceleration of the aircraft along its velocity vector;

d. utilizing said actual flight path angle and acceleration of the aircraft along its velocity vector to determine a total flight path angle which is directly related to the rate of change of total energy of the aircraft, the total energy of the aircraft being the sum of the kinetic and potential energy components of the aircraft;

e. utilizing said rate of change of air speed, said actual flight path angle and said total flight path angle to provide a display to the pilot which is an indication of the wind shear affecting the aircraft; and

f. utilizing a measure of wind shear severity to provide an anticipation to the pilot of a critical angle of attack, including the steps of generating a threshold value of wind shear severity, and indicating to the pilot when the measure of wind shear severity exceeds said threshold value.

4,281,384

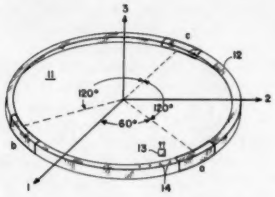
RIM INERTIAL MEASURING SYSTEM

Nelson J. Groom, White Marsh; Williard W. Anderson, Yorktown, and William H. Phillips, Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 102,002

Int. Cl.[3] **G01C** *23/00*

U.S. Cl. 364—453 **10 Claims**



1. An inertial measuring system for measuring the angular rate of a vehicle about two mutually perpendicular axes comprising:

a rim attached to said vehicle such that the plane of said rim is parallel to the plane of said two axes;

several magnetic bearing elements located around said rim for magnetically suspending said rim;

means for spinning said rim;

each of said magnetic bearing elements including means for controlling the position of said rim in the axial and radial directions the last mentioned means including means for producing a signal proportional to the movements of the rim in the axial direction; and

computer means receiving said signals proportional to the movement of the rim in the axial direction from each of said several magnetic bearing elements for producing the angular rates of said vehicle about said two mutually perpendicular axes.

4,281,385

CONTROL SYSTEM FOR A MACHINE TOOL

Toru Nakaso, Nagoya; Kenji Nomura, Aichi, and Kunimichi Nakashima, Anjo, all of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 22, 1979, Ser. No. 51,187

Claims priority, application Japan, Jul. 6, 1978, 53-82607

Int. Cl.[3] **G06F** *15/46*

U.S. Cl. 364—474 **7 Claims**

1. A control system for a machine tool having a tool spindle rotatably carried therein, a motor drivingly connected to said tool spindle for rotating said tool spindle, and a plurality of servomotors for effecting movement of said tool spindle along first and second orthogonal axes relative to a workpiece mounted on said machine tool, said control system comprising:

feed control means connected to said servomotors for selec-

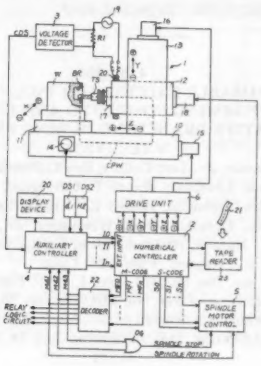
tively controlling said servomotors in accordance with feed pulses and axis designation signals;

a touch sensitive tool capable of being received in said tool spindle;

touch sensing circuit means electrically connected to said touch sensitive tool for detecting contact of said touch sensitive tool with said workpiece and for emitting a contact detection signal upon such contact detection, said workpiece being formed with a bore;

auxiliary controller means connected to said touch sensing circuit means and said feed control means for performing the following functions:

(i) a centering control in response to a centering instruction signal for applying feed pulses and axis designation signals to said feed control means while controlling the application of said feed pulses and said axis designation signals in response to said contact detection signal to



thereby align the rotational axis of said tool spindle with the axis of said workpiece bore, and

(ii) a diameter measuring control in response to a measuring instruction signal for applying feed pulses and axis designation signal to said feed control means so as to move said tool spindle relative to said workpiece from one position to another position at each of which said touch sensitive tool contacts said workpiece, along a path passing through the center of said workpiece bore, to thereby measure the diameter of said workpiece bore; and

a motor control circuit connected to said motor for controlling said motor;

said motor and motor control circuit rotating said tool spindle at a predetermined speed said centering control function and inhibiting the rotation of said tool spindle when said auxiliary controller means is performing said diameter measuring control function.

4,281,386

SYSTEMS FOR DETECTING FAULTS IN ELECTRIC POWER SYSTEMS

Ryotaro Kondow, Fuchu, and Eiichi Okamoto, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

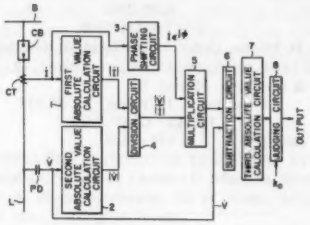
Filed Aug. 1, 1979, Ser. No. 62,622
Int. Cl.³ G06F *15/20;* G01R *31/08*
U.S. Cl. 364—492 **4 Claims**

1. In a protective relay system in which a fault in an electric power system is detected using a current and a voltage of the electric power system, and a circuit breaker provided in the electric power system is tripped in accordance with the fault detection, the improvement which comprises:

first means for detecting a current and a voltage of the electric power system,

second means responsive to the detected current and the detected voltage for producing a first quantity having an absolute value equal to that of said detected voltage and having a phase in advance of said detected current by a predetermined impendance angle of the electric power system,

third means responsive to said detected voltage and said first quantity for obtaining the absolute value of the difference between said voltage and said first quantity, and



fourth means responsive to said absolute value from said third means for comparing it with a predetermined constant and producing a fault detection signal if, as a result of the comparison, said absolute value is found to be smaller than said constant,

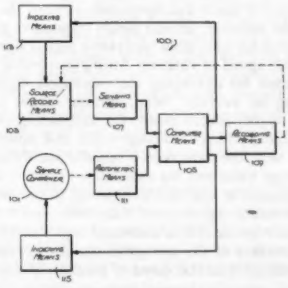
said circuit breaker being tripped in accordance with said fault detection signal.

4,281,387

AUTOMATIC CHEMICAL ANALYSIS APPARATUS AND METHOD

Thomas L. Kraft; Howard A. Vick, both of Houston, Tex., and Miles G. Hossom, Hauppauge, N.Y., assignors to American Home Products Corp., New York, N.Y.

Filed May 21, 1979, Ser. No. 40,524
Int. Cl.³ G06F *15/20;* G01N *33/16*
U.S. Cl. 364—497 **45 Claims**



1. Apparatus for automatically analyzing a plurality of samples in a variable sequence when provided with a source means containing information of the analyzing sequence, said apparatus comprising:

information sensing means for sensing information of the analyzing sequence from the source means and providing first electrical signals representative of this information;

sample characteristics determining means for providing second electrical signals from a plurality of test cells in accordance with the characteristics of the samples;

recording means for recording information representative of the analysis of the samples, said recording means being adapted to record such analysis information on record means;

correlating means for providing correlation between the

source means and said information sensing means and between the record means and said recording means; and

computer circuit means for receiving said first and second signals and providing:

signals to said correlating means for providing said correlation; and

signals to said recording means for recording the analysis information.

4,281,388

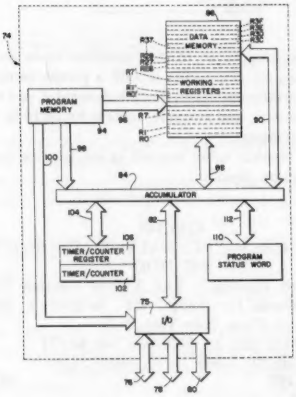
TACHOMETER

Kenneth D. Friend, Cedar Falls; David W. Gadtke, Waterloo, both of Iowa, and Duane H. Ziegler, Colona, Ill., assignors to Deere & Company, Moline, Ill.

Filed Jul. 9, 1979, Ser. No. 55,834

Int. Cl.[3] G01P *3/48*

U.S. Cl. 364—565 **53 Claims**



1. In a tachometer: a rotating member, first means for providing an first electrical signal indicative of the speed of rotation of the member, second means responsive to the first electrical signal for providing successive digital signals representative of the speed of rotation during successive time intervals, third means for averaging the successive digital signals and providing an average value, storage means for storing the average value, fourth means for comparing the most recent digital signal with the average value and updating the stored average with the most recent signal if the difference between the average value and the most recent signal is less a predetermined amount or alternately replacing the stored average with the most recent digital signal if the difference is greater than or equal to the predetermined amount, and fifth means responsive to the contents of the storage means for providing an output signal indicative of the speed of rotation of the member.

4,281,389

PACING TIMER MOUNTING ARRANGEMENT

Kent G. Smith, 51 W. 83rd St., New York, N.Y. 10024

Filed Jun. 22, 1979, Ser. No. 51,135

Int. Cl.[3] G06F *15/20;* A41D *19/00*

U.S. Cl. 364—569 **12 Claims**

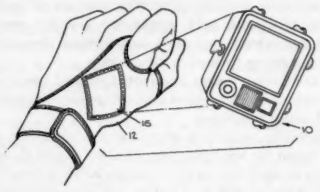
1. A pacing timer display mounting arrangement including in combination:

(a) a glove piece worn between the wrist and at least index finger and thumb;

(b) a mounting means for detachably mounting said pacing timer;

(c) a pacing timer adapted to be detachably affixed to said glove piece by said mounting means, said timer including a face and reverse side with said reverse side being directed toward said wrist when said pacing timer is mounted on said glove piece;

(d) said face of said pacing timer including a means for displaying information to the wearer;



(e) said reverse side including an input means for entering information into the pacing timer.

4,281,390

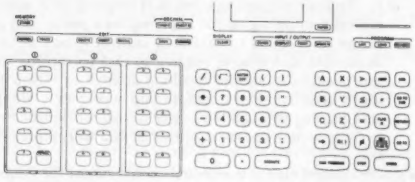
PROGRAMMABLE CALCULATOR INCLUDING MEANS FOR PERFORMING COMPUTED AND UNCOMPUTED RELATIVE BRANCHING DURING PROGRAM EXECUTION

Emil E. Olander, Jr., Fort Collins; Rex L. James, Loveland; Ivar W. Larson, Loveland; Wayne F. Covington, Loveland; Jack M. Walden, Loveland; Robert E. Watson, Loveland; Francis J. Yockey, Loveland; Fred Wenninger, Jr., Loveland, and Homer C. Russell, Berthoud, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 802,323, Jun. 1, 1977, Pat. No. 4,178,633, which is a division of Ser. No. 510,921, Sep. 30, 1974, Pat. No. 4,028,538, which is a division of Ser. No. 212,581, Dec. 27, 1971, Pat. No. 3,839,630. This application Jun. 25, 1979, Ser. No. 51,581

Int. Cl.[3] G06F *15/00, 9/36*

U.S. Cl. 364—706 **5 Claims**



1. An electronic calculator comprising:

keyboard input means including a plurality of alphameric and control keys for entering alphameric statement lines into the calculator, said alphameric and control keys being operative for entering an unconditional relative branch statement into the calculator;

memory means, coupled to said keyboard input means, for storing a program comprising a plurality of alphameric statement lines entered into the calculator;

processing means, coupled to said keyboard input means and memory means, for processing the alphameric statement lines stored as a program in said memory means to perform selected functions;

said processing means being responsive to an unconditional relative branch statement, including specification of an argument, encountered during processing of a line of a program stored in said memory means, for transferring processing of that program to a line located an incremental number of lines within said program from the line containing the unconditional relative branch statement, as specified by said argument; and

output means, coupled to said processing means, for provid-

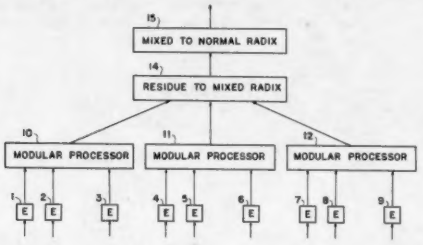
ing a visual indication of selected functions performed by the calculator.

4,281,391

NUMBER THEORETIC PROCESSOR

Alan Huang, Menlo Park, Calif., assignor to Leland Stanford Junior University, Stanford, Calif.

Filed Jan. 15, 1979, Ser. No. 3,745
Int. Cl.³ H03K *13/24*
U.S. Cl. 364—746 **21 Claims**



1. A system for converting a mixed radix number to a normal radix number comprising:

a means for storing a normal radix number at a location specified by each value of each mixed radix coefficient;

a means for retrieving from the storage means the normal radix numbers corresponding to each of the mixed radix coefficients to be converted connected to the output of said storage means;

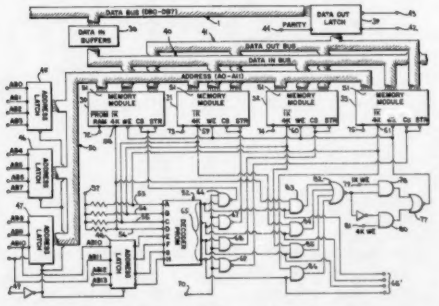
and a means for adding the normal radix numbers which have been produced by the retrieval means connected to the output of said retrieval means.

4,281,392

MEMORY CIRCUIT FOR PROGRAMMABLE MACHINES

Valdis Grants, Lyndhurst; Ron Schultz, Willoughby, and Timothy E. McAdams, Willowick, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 1, 1979, Ser. No. 35,068
Int. Cl.³ G06F *13/06*; G11C *5/06, 7/00, 9/00*
U.S. Cl. 364—900 **9 Claims**



1. A memory circuit which comprises:

a set of memory modules, each module having address terminals for receiving a multi-bit address code, each module having a data terminal, each module having an enable terminal for receiving an enable signal which enables the module to respond to the multi-bit address code and couple data through the data terminal, and each module having means for generating a size feedback signal which is indicative of the number of separate, contiguous addresses required by the memory module; and

a decoder circuit having a first input connected to receive at least one bit of the multi-bit address code applied to said memory modules and a set of second inputs each of which second inputs is connected to receive the size feedback signal from a respective one of said memory modules, and in which said decoder circuit includes a set of output terminals, each of which is connected to a respective one of said memory module enable terminals;

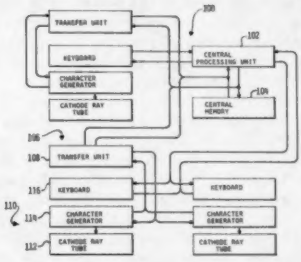
wherein said decoder circuit is operable in response to an applied address code and the size feedback signals generated by said memory modules to generate an enable signal at selected ones of its output terminals and to thereby enable each memory module when an address is applied to the memory module which lies within its allocated address space.

4,281,393

PROGRAMMABLE COMPUTER TERMINAL SYSTEM

Ephraim Gitelman, Needham; Glendon P. Marston, Manchester, and Peter A. Bird, Winchester, all of Mass., assignors to Computek, Inc., Burlington, Mass.

Continuation of Ser. No. 805,120, Jun. 9, 1977, abandoned. This application Aug. 10, 1979, Ser. No. 65,552
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **2 Claims**



1. An input-output terminal for operative connection to a digital data processor, said terminal comprising:

(a) a cathode ray tube including a source for generating an electron beam, a screen on which different point locations are illuminated by impingement of said electron beam at different times, a horizontal control and a vertical control for positioning said electron beam with respect to said screen, and a video control for allowing and preventing said impingement of said electron beam on selected ones of said different point locations at selected ones of said different times;

(b) a character generator for data display signals, said character generator including a sync drive for generating sync signals and a read-only memory for generating video signals, said sync signals being applied to said horizontal control and said vertical control in order to establish a succession of groups of raster lines of said point locations, said video signals being applied to said video control in order to provide serial indications representing the presence and absence of dots at said point locations, a restricted matrix of rows and columns of said dots being established by said readonly memory in accordance with the configuration of a character, a sequence of such restricted matrices constituting the configurations of a row of characters in a group of raster lines, each of said raster lines of said group extending continuously the full width of said row of characters through corresponding rows of said sequence of restricted matrices;

(c) a transfer unit operatively connected to said digital data processor for access to said digital data processor in terms of data storage signals and operatively connected to said character generator for access to said character generator

in terms of data buffer signals, said transfer unit including a plurality of registers containing character indicia and link indicia, said character indicia including grid indicia representing character format information and data indicia representing character identity information, said link indicia organizing said character indicia in a linked list, said character indicia corresponding to said data storage signals from said digital data processor and corresponding to said data buffer signals to said character generator;

(d) said character generator including: a clock pulse generator for producing pulses corresponding to said point locations; a point counter and decoder responsive to said clock pulse generator; a column counter and decoder responsive to said point counter and decoder; a line counter and decoder responsive to said column counter and decoder; a row counter and decoder responsive to said line counter and decoder; a first shift register responsive to said transfer unit, said point counter and decoder, and said line counter and decoder; an attribute delay register responsive to said first shift register; a plurality of point matrix memories responsive to said first shift register, said line counter and decoder, and said attribute delay register; a second shift register responsive to said point counter and decoder and to said plurality of point matrix memories; and a video logic circuit responsive to said second shift register, said attribute delay register, said column counter and decoder, and said row counter and decoder; said horizontal control being responsive to said column counter and decoder; said vertical control being responsive to said row counter and decoder; and said video control being responsive to said video logic;

(e) said transfer unit including: a control unit; a latch register responsive to said control unit and to memory data from said digital data processor; a link register responsive to said latch register; a first address register; a second address register responsive to said link register; a first gate responsive to said control unit, said first address register, and said second address register in order to provide signals representing a memory address; a configuration register responsive to said latch register to provide signals representing configuration parameters; a second gate responsive to said latch register; a cursor register responsive to said latch register; an attribute storage responsive to said second gate; a first shift register responsive to said second gate and to said control unit; an end-of-row logic circuit responsive to said second gate; an attribute logic circuit responsive to said cursor register and said attribute storage; and a second shift register responsive to said attribute logic circuit in order to provide signals representing attributes.

4,281,394

MONITORING AND SIGNALLING SYSTEM INCLUDING APPARATUS FOR PROCESSING BINARY SIGNALS HAVING MULTIPLE MESSAGES

Jeffrey R. Fox, Concord; Arthur Margolies, Ashland; Rob Moolenbeek, Dover, and Martin L. Resnick, Chestnut Hill, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 14, 1979, Ser. No. 94,015
Int. Cl.³ G06F *11/08, 11/30*
U.S. Cl. 364—900 **25 Claims**

1. In a monitoring and signalling system, apparatus comprising:

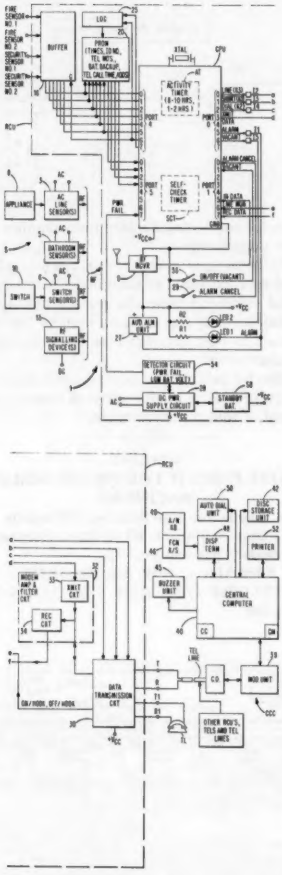
sensor means operative to monitor the occurrence of a particular activity and in response thereto to produce a binary coded signal including a predetermined number of messages in succession within a predetermined first fixed period of time, each of said messages including a binary word, and successive ones of the binary words having an interword therebetween; and

processing means operative to receive and process the binary coded signal produced by the sensor means, said processing means comprising:

(a) data storage means for storing bits of data;

(b) means operative to detect the bits of messages of the coded signal and operative in response to detecting a bit of a first logic value to place a bit of that value in the data storage means, and operative in response to detecting a bit of a second logic value to place a bit of that value in the data storage means;

(c) means operative to detect in interword in the coded signal and in response thereto to examine the data storage means to determine the presence in the data storage



means of a predetermined quantity of data related to the number of bits of a binary word in a message; and

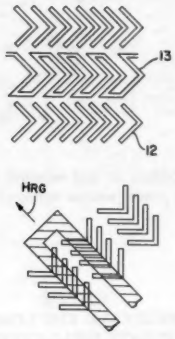
(d) test means operative if the data storage means contains the predetermined quantity of data therein as derived from the processing of one message of the coded signal to test the data as to its satisfaction of predetermined requirements for acceptance of the data and, if the data satisfies the predetermined requirements, to establish a predetermined second fixed period of time within which like data of the next succeeding message of the coded signal must be derived from the next succeeding message and satisfy the predetermined requirements for acceptance of the data.

4,281,395

MAGNETIC BUBBLE MEMORY DEVICE

Ryo Suzuki, Kokubunji; Atsushi Asano, Tokyo; Masatoshi Takeshita, Hachioji, and Teruaki Takeuchi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 973,819
Claims priority, application Japan, Jan. 6, 1978, 53/211
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—15 8 Claims



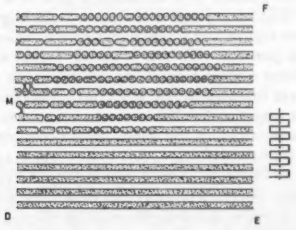
1. A magnetic bubble memory device comprising: a layer of magnetic material in which a magnetic bubble is movable in response to the rotation of a rotating magnetic field; a plurality of minor loops provided on said layer, each minor loop having first and second ends; a first major line connected through a first gate to at least one of said first ends of said minor loops; a nucleation type magnetic bubble generator provided at one end of said first major line; a second major line connected through a second gate to at least a said second end of said minor loops; and a magnetic bubble detector provided at the other end of said second major line; wherein said generator is arranged by geometrical rotation with respect to said detector in a chip to operate said generator and said detector at different phases in the same cycle of rotation of said rotating magnetic field.

4,281,396

MAGNETIC STRIP DOMAIN MEMORY SYSTEM

Jan Roos, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,058
Claims priority, application Netherlands, Jan. 25, 1977, 7700270
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—29 12 Claims



1. A memory device comprising:

a domain layer of magnetic material having a two-dimensional configuration of strip domains therein, said strip domains having domain walls extending substantially perpendicular to a first coordinate direction in the layer and having a direction of magnetization substantially transverse to the layer, adjacent strip domains having substantially oppositely oriented magnetizations;

generating means for generating in the domain layer one or more pairs of domain walls extending substantially along the first coordinate direction; and

detector means for detecting pairs of domain walls extending substantially along the first coordinate direction;

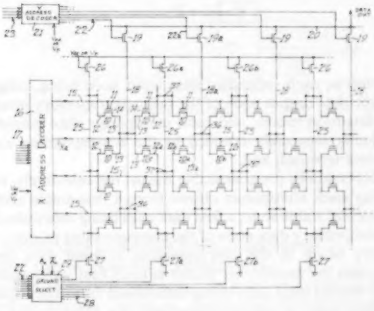
wherein the pairs of domain walls extending substantially along the first coordinate direction each comprise an interruption in a strip domain, said interruption extending substantially along the first coordinate direction to the adjacent strip domains of opposite magnetization, said interruptions each comprising a region whose magnetization is substantially opposite to that of the interrupted strip domain.

4,281,397

VIRTUAL GROUND MOS EPROM OR ROM MATRIX

Joseph H. Neal, Missouri City, and Paul A. Reed, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 29, 1979, Ser. No. 88,789
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—189 9 Claims



1. A semiconductor memory device comprising an array of rows and columns of memory cells in a face of a semiconductor body, each cell including a transistor having a control electrode and a current path between first and second electrodes, a plurality of row lines, the control electrodes of all transistors in a row being electrically connected to a row line, a plurality of column lines, alternate first and second column lines adjacent one another functioning as ground lines and output lines, respectively, all of the first electrodes of adjacent transistors in adjacent columns of cells being connected to a first column line functioning as a ground line, all of the second electrodes of adjacent transistors in adjacent columns of cells being connected to a second column line functioning as an output line, row decode means for selecting row lines for accessing the array, and column decode means for selecting first column lines and selecting second column line for accessing the array.

4,281,398

BLOCK REDUNDANCY FOR MEMORY ARRAY

Vernon G. McKenny, and David L. Taylor, both of Carrollton, Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Feb. 12, 1980, Ser. No. 120,929
Int. Cl.[3] G11C *13/00, 11/40*
U.S. Cl. 365—200 6 Claims

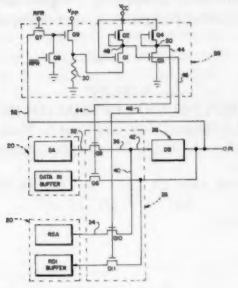
1. A fault tolerant memory system comprising:

a plurality of primary memory blocks having data storage cells arranged in rows and columns;

a redundant memory block of data storage cells arranged in rows and columns;

data detection means coupled to each primary and redundant memory block, said data detection means each including a data output node for separately conducting data from the storage cells of the block to which it is coupled to an external data terminal in response to row and column address signals;

a multiplexer circuit coupled to the data detection means for each primary memory block and to the corresponding external data terminal, each multiplexer circuit having primary and redundant data input nodes and a data output node, each primary data input node being coupled to the data output node of the corresponding data detection



means, each redundant data input node being coupled to the data output node of the redundant memory block data detection means, and each multiplexer data output node being separately coupled to the corresponding external data terminal; and,

independently programmable means for selectively rendering each multiplexer circuit from a first stable state to a second stable state, a first data path being established from the primary data node of the corresponding primary memory block to the corresponding external data terminal when the multiplexer citcuit is in its first stable state, and a second data path being established from the redundant data node of the redundant memory block to the corresponding external data terminal when the multiplexer is in its second stable state.

4,281,399

SEMICONDUCTOR MEMORY DEVICE

Shin'ichiro Yamamoto, Yokohama, Japan, assignor to VLSI Technology Research Association, Japan

Filed Jul. 20, 1979, Ser. No. 59,127

Claims priority, application Japan, Jul. 25, 1978, 53-90609

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—203 **12 Claims**

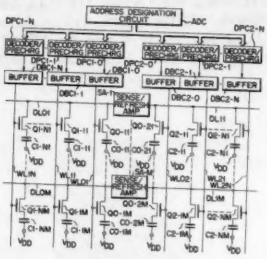
7. A semiconductor memory device comprising:

memory cells each including a single field effect transistor and a single capacitor, and being arranged in a matrix fashion;

a plurality of word lines each connected to the gate terminals of those of said field effect transistors which are arranged on the same column;

a plurality of digit lines which are each connected commonly to one of the drain and source terminals of said field effect transistors arranged on the same row and are connected to a first power source terminal to be selectively charged to a power source voltage level; and

means for writing data into said capacitor of a selected one of said memory cells at a voltage equal to said power source voltage level comprising a plurality of energizing circuits which are each connected to a corresponding one of said word lines, and which energize a word line corresponding to said selected memory cell to a higher voltage level than said power source voltage level when a digit



line corresponding to said selected memory cell is energized to said power source voltage level.

4,281,400

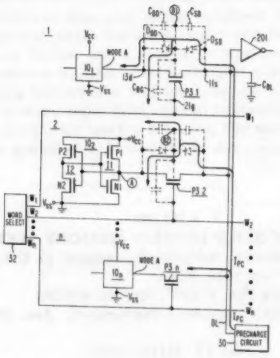
CIRCUIT FOR REDUCING THE LOADING EFFECT OF AN INSULATED-GATE FIELD-EFFECT TRANSISTOR (IGFET) ON A SIGNAL SOURCE

Henry I. Schanzer, Edison, and Roger G. Stewart, Neshanic Station, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,222

Int. Cl.³ G11C *7/00, 11/40*

U.S. Cl. 365—203 **9 Claims**



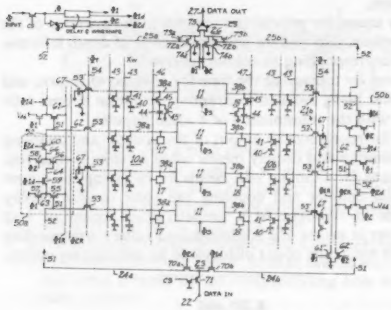
1. In combination with an insulated-gate field-effect transistor (IGFET) having source and drain regions spaced apart by a substrate region, and wherein said source region forms a first rectifying junction with said substrate region and said drain region forms a second rectifying junction with said substrate region, said first and second junctions being poled to conduct current in opposite direction and wherein said substrate region is electrically floating, the improvement comprising:

means for first applying to said source region a signal making a first transition from a first voltage (V_1) to a second voltage (V_2) of a polarity and magnitude to forward bias said source-to-substrate junction for placing said substrate region at a potential close to said second voltage and for then applying a signal making a second transition of a polarity opposite to said first transition for reverse biasing said source-to-substrate junction and isolating said substrate region from said source region.

4,281,401
SEMICONDUCTOR READ/WRITE MEMORY ARRAY HAVING HIGH SPEED SERIAL SHIFT REGISTER ACCESS

Donald J. Redwine; Lionel S. White, Jr., and G. R. Mohan Rao, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 23, 1979, Ser. No. 96,957
Int. Cl.[3] G11C 11/40
U.S. Cl. 365—222 10 Claims

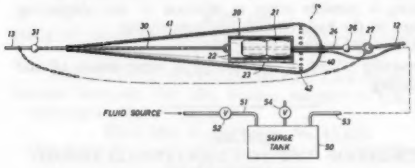


1. A semiconductor memory device fabricated in a single MOS/LSI integrated semiconductor circuit, comprising:
an array of M rows and N columns of random access type memory cells, where M and N are integral powers of two;
N sense amplifiers each one connected to one of the columns;
a serial shift register split into two separate registers, each separate register having N/2 stages, one stage associated with each of said columns;
two separate sets of transfer means for loading bits into the two shift registers from alternate ones of said columns in response to a transfer signal;
means for receiving an address from a source external to the device and for addressing the array for selecting one of the rows for actuation; and
means for transmitting data serially out of said register to external, the data being alternated bit-by-bit from the two separate registers.

4,281,402
MARINE CABLE DECOUPLER

Vitold R. Kruka, and Charles W. Ruth, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 2, 1979, Ser. No. 54,220
Int. Cl.[3] G01V 1/38
U.S. Cl. 367—15 13 Claims

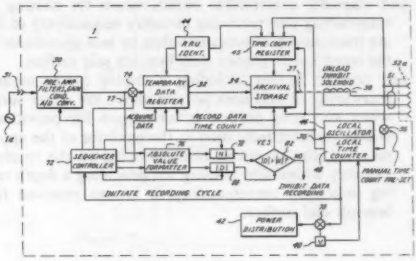


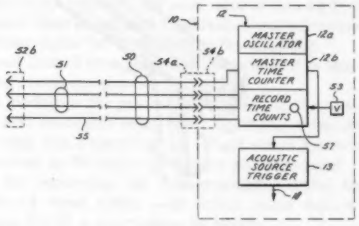
1. A decoupling apparatus for substantially isolating a towed seismic cable from noise transmitted along the tow cable from the towing vessel, said decoupling apparatus comprising:
a fluid spring means, said spring means being disposed in said tow cable between said tow vessel and said seismic cable;
means coupled to spring means for minimizing the spring constant of the spring means; and
said spring means being coupled between one end of said seismic cable and one end of said tow cable whereby said seismic cable is isolated from the tow cable.

4,281,403
SEISMIC DATA RECORDING METHOD AND APPARATUS

Lee E. Siems, and James A. Porter, both of Houston, Tex., assignors to Litton Resources Systems, Inc., Houston, Tex.

Filed Sep. 12, 1979, Ser. No. 74,587
Int. Cl.[3] G01V 1/24
U.S. Cl. 367—76 21 Claims





1. A seismic data acquisition system comprising:
a central station including a master clock;
a plurality of remote recording units for receiving and recording seismic signals as a function of time during a recording period when the remote recording units are incommunicado with respect to the central station;
a local clock associated with each remote recording unit;
means for determining by direct comparison the relative time errors that accumulate between the master clock and each local clock during the recording period
means responsive to the relative determined time errors for determining the pro rata portion of the time error associated with the time of each enablement of each remote recording unit
apportioning a pro-rata portion of the respective accumulated time errors associated with each said local clock to the initiation time of each recording cycle.

4,281,404
DEPTH FINDING APPARATUS

Ray E. Morrow, Jr., and Richard W. Woodson, both of Salem, Oreg., assignors to Morrow Electronics, Inc., Salem, Oreg.

Filed Aug. 27, 1979, Ser. No. 69,858
Int. Cl.[3] G01S 15/14
U.S. Cl. 367—108 12 Claims

1. Depth finding apparatus comprising:
a hand held self-contained housing having a water immersible nose portion at the forward end thereof carrying a sonic transducer adapted to transmit and receive sonic impulses in a direction substantially forward of said nose portion within a body of water into which said nose por-

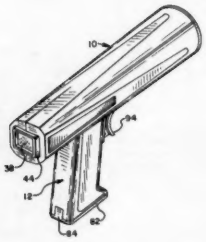
tion is submerged, such that the direction of transmission and reception of sonic impulses within said body of water is predetermined by the manual orientation of said housing with respect to the body of water,

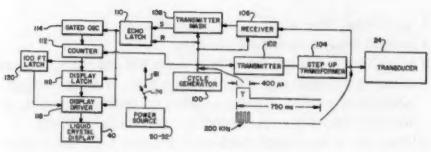
transmitting and receiving circuitry located within said housing and having electrical connection with said transducer for operating the same to transmit sonic impulses beneath the surface of said body of water and receive echoes from beneath said surface, wherein an interior portion of said housing containing said circuitry is substantially watertight,

means for providing power within said housing for energizing said transmitting and receiving circuitry,

and manually controllable switch means for causing said transmitting and receiving circuitry respectively to initiate transmission of sonic impulses by said transducer and the reception of echoes from beneath said surface,

said housing further including a display means mounted rearwardly of said nose portion above the water surface when said nose portion is submerged for providing a visibly readable indication to the operator of the apparatus, said display means being coupled to the receiving circuitry within said housing for providing a depth reading indication corresponding to echoes received from beneath said surface,





said housing including a substantially barrel-shaped portion having said nose portion on the forward end thereof and having said display means mounted on the opposite end thereof and including a hand grip portion extending outwardly from the barrel-shaped portion,

a battery cartridge slidably receivable into the hand grip portion from the end thereof remote from said barrel-shaped portion, said battery cartridge carrying batteries comprising said means for providing power, wherein said battery cartridge is provided with contact means for making connection with said transmitting and receiving circuitry within said housing when said battery cartridge is slid into position, said battery cartridge including sealing means proximate the end thereof remote from said barrel-shaped portion for forming a watertight seal with said hand grip portion when said battery cartridge is in place,

said battery cartridge including a trigger lever extending upwardly from the remote end of said battery cartridge and located externally of the wateright interior, said trigger lever having a trigger handle and a magnet carried thereby, said trigger handle being flexible for moving said magnet toward self hand grip portion, said switch means comprising reed switch means carried by said battery cartridge within the interior of said hand grip portion and adapted for connecting said batteries to said transmitting and receiving circuitry when said magnet is positioned by said trigger arm in close proximity to the reed contacts thereof.

11. Depth finding apparatus comprising:

a sonic transducer adapted to transmit and receive sonic impulses in a body of water,

transmitting and receiving circuitry having electrical connection with said transducer for operating the same to transmit periodic sonic impulses beneath the surface of said body of water and receive echoes from beneath said surface,

display means for providing a readout to the operator of the apparatus, said readout being indicative of depth information corresponding to echoes received,

a counter for measuring the time for an echo to return, said counter being initiated in counting operation in time relation with the transmission of a sonic impulse,

means for receiving the output of the counter and coupling the same to said display means when an echo is received,

and means for disabling said means for receiving the output of said counter and coupling the same to said display means in response to a predetermined count of said counter in excess of a predetermined value corresponding to the maximum count displayable by said display means.

4,281,405

REDUCTION OF ENERGY CONSUMPTION OF ELECTRONIC TIMEPIECE

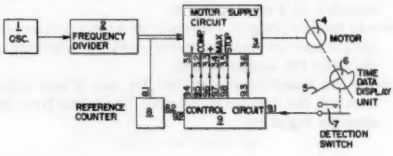
Rene Besson, Neuchatel, and Igor Scherrer, Colombier, both of Switzerland, assignors to Ebauches S.A., Switzerland

Filed Jun. 20, 1979, Ser. No. 50,340

Claims priority, application Switzerland, Jun. 20, 1978, 6715/78

Int. Cl.[3] **G04B** *9/00*

U.S. Cl. 368—66 **10 Claims**



1. A method for reducing the consumption of electrical energy in an electronic time piece wherein a motor is supplied by electrical energy for driving a time data displaying means in accordance with a time data signal, comprising the steps of:

periodically providing a reference signal in response to said data signal;

reducing said energy in response to said reference signal;

detecting a possible error in position of said displaying means on the basis of said time data signal;

correcting said possible error; and

subsequently adjusting said energy in dependance of said detecting.

4,281,406

WATER-PROOF CASE FOR DIGITAL ELECTRONIC TIMEPIECES

Eiichiro Tanaka, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1979, Ser. No. 92,932

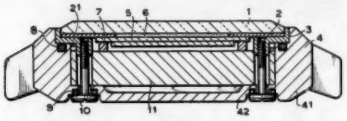
Claims priority, application Japan, Nov. 22, 1978, 53-144784

Int. Cl.[3] **G04C** *19/00, 23/02;* **G04B** *37/00*

U.S. Cl. 368—82 **9 Claims**

1. A water-proof case for use in digital display timepieces comprising:

(a) a cover plate;
(b) a panel cover coupled with the back surface of the cover plate;
(c) a display panel arranged on the back side of the panel cover and the periphery of said display panel being concealed by said panel cover;
(d) a coupling member attached to the back surface of said panel cover as a unitary structure and having at least one hole therein, the hole being adapted to grip a fastener;



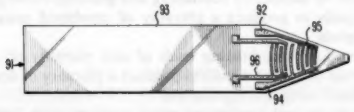
(e) a case body and a back cover being of a one-piece construction formed as a unitary structure;
(f) an aperture in said back cover corresponding to each of said holes in the coupling member, each aperture being coaxially positioned with each hole;
(g) each aperture being provided with a fastener, the fastener penetrating the back cover through one of said apertures and being gripped by the corresponding hole in the coupling member.

4,281,407

SURFACE ACOUSTIC WAVE PICKUP AND RECORDING DEVICE

Soitiro Tosima, Machida, Japan, assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,444
Int. Cl.[3] G11B *3/00;* **H04R** *17/04*
U.S. Cl. 369—130 **10 Claims**



1. In a disc record or playback system for recording or retrieving information in the form of surface variations in a disc-shaped record medium, a surface acoustic wave stylus, comprising:
an elongated member tapered to a tip at one end, said member being arranged to support the propagation of surface acoustic wave in at least one region of said member; and electrode means provided in the vicinity of said tip for focusing surface acoustic waves to said tip.

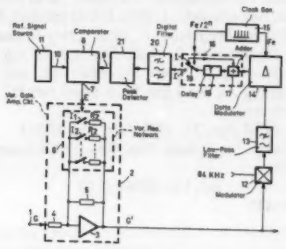
4,281,408

DIGITAL SIGNAL PROCESSING ARRANGEMENT FOR CONTROLLING THE LEVEL OF A FREQUENCY-DIVISION MULTIPLEX SIGNAL

Georges Bonnerot, Les Ulis, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,032
Claims priority, application France, Jun. 8, 1978, 78 17126
Int. Cl.[3] H04J *1/05*
U.S. Cl. 370—70 **2 Claims**

1. A level control arrangement for controlling the level of a frequency-division multiplex signal which includes a pilot signal, the level control arrangement comprising
an amplifier having an adjustable gain factor and having means responsive to a setting signal for adjusting the gain factor thereof,
setting signal-generating means coupled to the output of said amplifier and comprising:
=frequency transposition means for transposing the frequency range of the multiplex signal to lower the frequency of the pilot signal;
=a low-pass filter which has its input coupled to the output of the frequency transposition means;
=converting means for converting an analog signal into a digital signal, the input of the converting means being connected to the output of said low-pass filter;
=digital filter means, having an input connected to the output of the converting means, for generating a digital output signal which is characteristic of said pilot signal; and



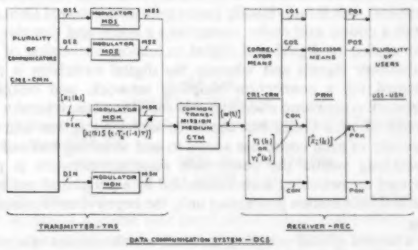
=means for comparing the peak value of the output of the digital filter means with a reference level to produce the setting signal for application to the amplifier;
which level control arrangement is characterized in that said converting means comprise:
a delta modulator for generating a delta-modulation signal, the delta modulator being controlled by sampling pulses occuring with a sampling rate Fe and which has its input connected to the output of the low-pass filter; and
means for converting the delta-modulation signal into a permuted signal whose code words occur with a frequency $Fe/2^n$, n representing an integer.

4,281,409

METHOD AND APPARATUS FOR MULTIPLEX BINARY DATA COMMUNICATION

Kenneth S. Schneider, 134 Birchwood Park Dr., Jericho, N.Y. 11753

Filed Jun. 25, 1979, Ser. No. 50,927
Int. Cl.[3] H04J *13/00, 11/00*
U.S. Cl. 370—18 **26 Claims**



11. In a data communication system wherein a plurality of communicators at a transmitter emit bits of information to respective modulators, each operating with a modulation signal, which transmit bit-modulated signals to a plurality of users, each associated with a definite communicator at a receiver over a common transmission medium, the modulation signals being mutually linearly independent, the method of signal processing comprising the steps of first sequentially transmitting from said transmitter to said receiver a modula-

tion signal from each modulator, at the receiver storing a representation of each received modulation signal, and utilizing each stored representation to detect bits for the respective users in a stream of modulated signals.

4,281,410

CIRCUIT ARRANGEMENT FOR TELECOMMUNICATIONS ESPECIALLY TELEPHONE INSTALLATIONS THAT SWITCH THROUGH DIGITALLY BY TIME DIVISION

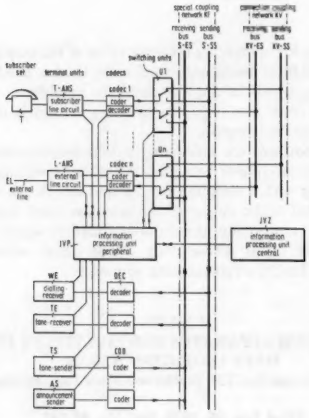
Manfred Agricola, Zeuläckerstrasse 10B, 6000 Frankfurt 60; Klaus Dietze, Niedwiesenstr. 25a, 6000 Frankfurt 50; Horst Mayr-Stein, Spiessfeldstr. 1, 6382 Friedrichsdorf; Karl-Heinz Reimer, Brandenburgerstr. 1, 6051 Ober-Roden; Andreas Reinhold, Jägerstrasse 9, 6457 Maintal 3; Adolf Schmid, Hammarskjöldring 27, 6000 Frankfurt 50, and Johannes-Georg Schosnig, An der Lühe 10, 6 Frankfurt 90, all of Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,371

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819119

Int. Cl.³ H04J *3/12*

U.S. Cl. 370—110 **6 Claims**



1. In a digital telephone exchange with time division multiplex switching having a plurality of terminal units for the connection of subscriber lines and external lines wherein each terminal unit is individually connected with external lines and with a codec, said codec comprising a coder and decoder for the analog to digital and digital to analog conversion of the subscriber signals and wherein the digital switching is performed via a connection coupling network, said coupling network comprising a sending and receiving bus, whereby the coder of each codec has access to said sending bus and the decoder of each codec has access to said receiving bus and the switching within the connection coupling network is performed by switching units controlled by a peripheral and by a central information processing unit, the improvement comprising:

a second special coupling network which consists of a sending and a receiving bus;

a plurality of receivers such as dialling receivers and tone receivers which are connected via decoders with the sending bus of said second special coupling network;

a plurality of senders such as tone senders and announcement senders which are connected via coders with the receiving bus of said second special coupling network; and

means for selectively switching the terminal units to the coupling network or to the second special coupling network.

4,281,411

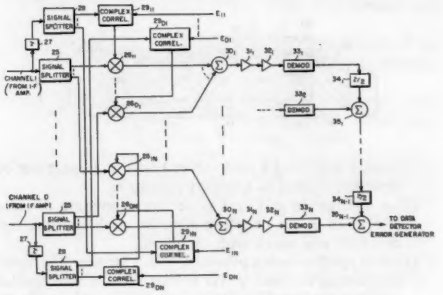
HIGH SPEED DIGITAL COMMUNICATION RECEIVER

Jerrold L. Bonn, Waltham; Paul F. Mahoney, Brighton, and Peter Monsen, Stow, all of Mass., assignors to Signatron, Inc., Lexington, Mass.

Filed Jun. 25, 1979, Ser. No. 51,722

Int. Cl.³ H04B *7/08*

U.S. Cl. 375—14 **9 Claims**



1. A receiver for processing signals transmitted through a dispersive medium from a transmitter and received in a plurality of diversity channels, said receiver comprising

forward transversal filter equalizer and combining means responsive to said received signals in each of said channels for processing said received signals to produce a combined demodulated weighted output signal, said forward transversal filter equalizer and combining means including

weighting means associate with each said diversity channel and responsive to the received signal at said channel and to an error signal for producing a plurality of weighted signals at each said channel;

means for selectively combining said plurality of weighted signals to produce a plurality of combined weighted signals;

means for demodulating each of said plurality of combined weighted signals to produce a plurality of demodulated weighted signals; and

time delay and combining means responsive to said demodulated weighted signals for combining said demodulated weighted signals at selected time spaced intervals to produce said combined demodulated weighted output signal; and

means responsive to said combined demodulated weighted output signal to produce said error signal.

4,281,412

METHOD OF AND APPARATUS FOR TRANSMITTING AND RECOVERING OFFSET QPSK MODULATED DATA

Frank A. Wissel, Cincinnati, Ohio; Donald E. Smith, Melbourne, Fla.; Robert L. Martinet, Roanoke, Va.; Mark J. Dapper, and Douglas A. Kiliman, both of Cincinnati, Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

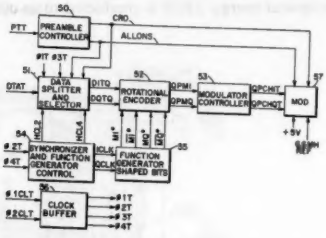
Filed Jul. 5, 1979, Ser. No. 54,902

Int. Cl.³ H03D *3/22*; H04L *27/22*

U.S. Cl. 375—86 **32 Claims**

1. A method of achieving bit timing references at a receiver for a carrier modulated by OQPSK, the modulation being achieved with a pair of orthogonal components, comprising transmitting the carrier with a constant reference phase modulation during a first interval, then during a second interval transmitting the carrier with rotational phase modulation representing binary bit values so that the orthogonal components phase modulate the carrier with a predetermined bit sequence at the receiver; responding to the carrier with constant phase modulation to lock the frequency and phase of a variable

frequency oscillator of a carrier recovery loop including a loop filter driven by outputs of orthogonal processing channels responsive to the oscillator; then responding to the carrier with rotational phase modulation to achieve bit synchronization at the receiver with the bits modulating the carrier while maintaining the frequency and phase lock; activating the carrier recovery loop to decision directed operation after achieving bit synchronization, the decision directed operation being



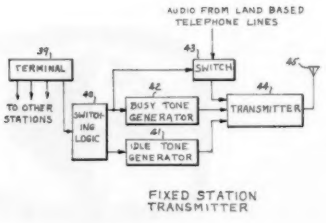
achieved by sampling and comparing components derived in the orthogonal channels in response to the carrier with rotational phase modulation; reducing the bandwidth of a filter used in achieving bit synchronization after the decay of transients in the carrier tracking loop resulting from a transition between locking of the loop and initiation of the decision directed operation; and then adjusting the bandwidth of the carrier tracking loop as a function of the quality of the received rotational modulated suppressed carrier.

4,281,413

MULTICHANNEL RADIO TELEPHONE SYSTEM

Robert T. Forrest, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Dec. 3, 1979, Ser. No. 99,551
Int. Cl.³ H04B *3/60*
U.S. Cl. 455—34 **8 Claims**



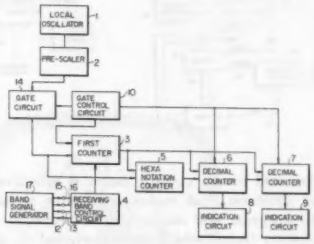
1. In a communication system having a plurality of spaced radio channels on which intermodulation signals may be present, and having means for transmitting an idle tone on a selected one of said channels to indicate that said one channel is idle and available for communication, the improvement comprising means for transmitting a busy tone on each channel that is being used for communication, whereby intermodulation signals which are present include both said idle channel tone and said busy tone, and said idle channel includes said idle tone without said busy tone.

4,281,414

RECEIVING CHANNEL NUMBER INDICATION SYSTEM FOR TELEVISION RECEIVER

Kiyoshi Fushimi, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1980, Ser. No. 148,782
Claims priority, application Japan, May 11, 1979, 54-56904
Int. Cl.³ H04B *1/26;* **G01R** *23/10*
U.S. Cl. 455—158 **3 Claims**



1. A receiving channel number indication system for a television receiver, comprising (a) a local oscillator having an output terminal for producing a local oscillation signal, (b) band signal generator means having an output terminal for producing a band signal representing a receiving band associated with the operation of said local oscillator, (c) a receiving band control circuit having an input terminal connected to the output terminal of said band signal generator circuit and an output terminal for producing an initial value signal set for each receiving band, (d) a gate circuit having an input terminal connected to the output terminal of said local oscillator and an output terminal for producing an output signal obtained by controlling the passage of said local oscillation signal, (e) a first counter having an input terminal connected to the output terminal of said gate circuit, an input terminal connected to the output terminal of said receiving band control circuit, and an output terminal for producing a control signal when the count of the output signal of said gate circuit exceeds the value of said initial value signal, (f) m base notation counter (m: channel separation number) having an input terminal connected to the output terminal of said gate circuit, an input terminal connected to the output terminal of said first counter, and an output terminal for producing the result of counting the output of said gate circuit in response to the control signal produced from said first counter, (g) an indicator having an input terminal connected to the output terminal of said m base notation counter, said indicator indicating the number of pulses applied thereto, and (h) control means for supplying driving pulses to said gate circuit, said first counter and said indicator.

4,281,415

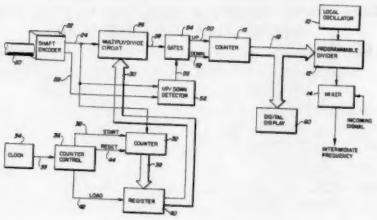
DIGITAL TUNER

Joseph Rock, Jr., Frederick, Md., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Sep. 24, 1979, Ser. No. 78,493
Int. Cl.³ H04B *1/40*
U.S. Cl. 455—173 **10 Claims**

1. A digital variable rate tuner drive circuit comprising:
tuning control means, means responsive thereto for providing a rate signal and a direction signal digitally indicating the rate of activity of said control means and the direction of effectiveness of said control means respectively, an incrementable and decrementable digital counter for storing a quantity which determines the frequency of a tuner, a digitally programmable multiplication circuit receiving said rate signal and digitally multiplying said rate signal by a selected factor, means for applying the output of said multiplication circuit for digitally incrementing or decrementing the quantity stored in said digital counter

whereby to raise or lower the tuner frequency, means responsive to said direction signal and arranged to cause said multiplication circuit output to increment said counter quantity when said tuning control means is effective in one direction and to decrement said counter quantity when said tuning control means is effective in the opposite direction, and means responsive to said rate signal to program said multiplication circuit to select a multiplication factor which is proportional to said rate signal, whereby the rate of change of tuner frequency is a function of the rate of activity of said control means.



4,281,416

LIGHT SOURCE SYSTEM IN AN OPTICAL TRANSMISSION REPEATER

Norio Seki, Tokyo; Yohtaro Yatsuzuka, Yokohama, and Haruo Sakaguchi, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,283

Claims priority, application Japan, Sep. 8, 1978, 53-109766

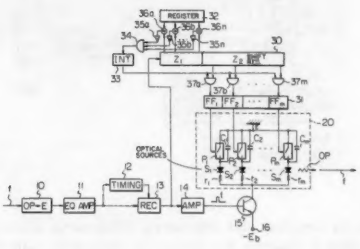
Int. Cl.[3] **H04N** *9/00*

U.S. Cl. 455—601 **4 Claims**

1. An optical transmission repeater comprising of an optical-electrical converter connected to the input optical fiber for converting the optical energy from the optical fiber to the electrical energy, an equalization circuit for the equalization of the output electrical signal of said optical-electrical converter, a timing circuit for extracting the timing information in the output of said equalization amplifier, a regenerative recognition circuit for the regeneration of a pulse signal to be transmitted according to the output of said timing circuit, a power amplifier for the power amplification of the output of said regenerative recognition circuit, a optical source for generating the optical energy which is conducted to an output optical fiber, and a switching transistor for supplying the bias current to said optical source according to the output pulse from said power amplifier,

characterized in that

said optical source has a plurality of optical source elements, a plurality of switching circuits each corresponding to each optical source elements, means for connecting the optical energy from said plurality of optical source elements to a single output optical fiber, and control means for controlling said switching circuits so that only one of the switching circuits is in the ON state.



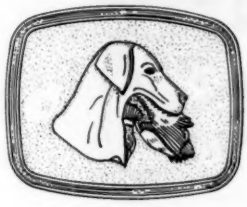
DESIGNS

JULY 28, 1981

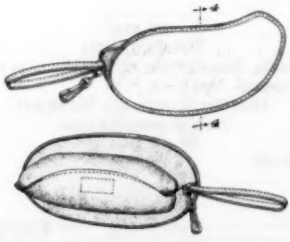
259,970
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,421
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

259,971
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,422
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440

259,972
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,427
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—440



259,973
SKI GOGGLE CASE
Stanley Walasek, 1116 Colonial Way, Bridgewater, N.J. 08807
Filed Mar. 5, 1979, Ser. No. 17,689
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—34



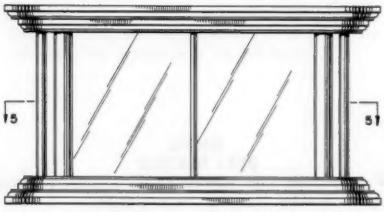
259,974
LUGGAGE BAG
Louis Schneider, Landsham; Hans A. Muth, Hechendorf, and Wolfgang Kloth, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 14, 1979, Ser. No. 20,317
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 11455
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

259,975
CARRYING CASE FOR A TYPEWRITER
Angelo M. LaBarbera, Liverpool, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Dec. 14, 1979, Ser. No. 103,824
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—72

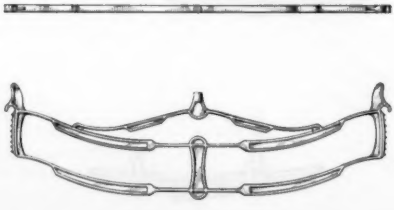
259,976
TOOTHBRUSH
Barry G. Seelig, Tuxedo Park, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 1, 1979, Ser. No. 80,837
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

259,977
TOOTHBRUSH
Robert P. Porper, New York, N.Y., assignor to Plakadent International, Ltd., White Plains, N.Y.
Filed Dec. 28, 1978, Ser. No. 974,141
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

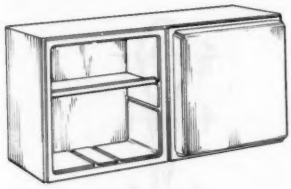
259,978
PICTURE FRAME
John F. Hamilton, Sr., P.O. Box 527, Laverne, Okla. 73848
Filed Mar. 12, 1979, Ser. No. 20,002
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—235



259,979
GARMENT HANGER BODY
Martin G. Hazenveld, Suezlaan 48, 5750 AB Deurne, Netherlands
Filed May 15, 1979, Ser. No. 39,137
Claims priority, application Benelux, Dec. 6, 1978, 53235-00
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—257

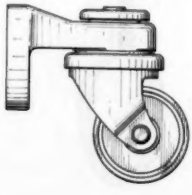


259,980
CABINET
Ludovico Magistretti, Milan, Italy, assignor to Diver-Viss S.r.l., Milan, Italy
Filed Oct. 27, 1978, Ser. No. 955,421
Claims priority, application Italy, May 31, 1978, 53369 A/78
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—127

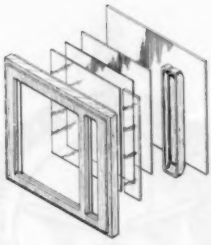


259,981
TABLE
Alan Alpert, 405 E. 54th St., Apartment 11B, New York, N.Y. 10022
Filed May 21, 1979, Ser. No. 40,683
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

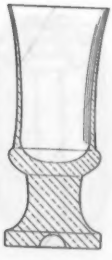
259,982
CASTER
Kiyoaki Kameda, 2635 Omiya, Fujinomiya-shi, Japan
Filed Oct. 12, 1978, Ser. No. 950,669
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



259,983
PICTURE FRAME
Joseph R. English, 1168 Oakleigh Dr., East Point, Ga. 30344
Filed Sep. 23, 1977, Ser. No. 835,977
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234

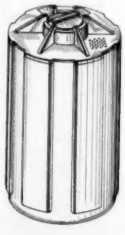


259,984
GOBLET OR SIMILAR ARTICLE
Veli T. Wirkkala, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Jul. 22, 1977, Ser. No. 818,164
Claims priority, application Finland, Feb. 28, 1977, 152
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—13

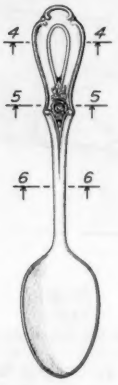


259,985
PLATE
Don Drumm, 110 Corson Ave., Akron, Ohio 44308, and John P. Mazzola, 143 W. Market St., Akron, Ohio 44303
Filed Jan. 22, 1979, Ser. No. 2,931
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—27

259,986
MULTI-COMPARTMENTAL CONDIMENT SHAKER
Sami Shemtov, 1228 E. 73rd St., Brooklyn, N.Y. 11234
Filed Feb. 21, 1978, Ser. No. 880,021
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—57

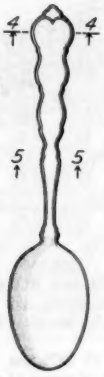


259,987
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Aug. 29, 1979, Ser. No. 70,811
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

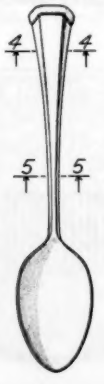


259,988
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Aug. 29, 1979, Ser. No. 70,812
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

259,989
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 29, 1979, Ser. No. 98,502
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

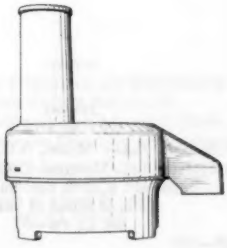


259,990
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 29, 1979, Ser. No. 98,503
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

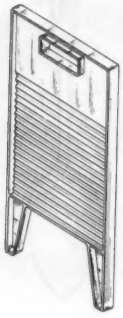


259,991
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 11, 1979, Ser. No. 102,460
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

259,992
FOOD PROCESSOR ATTACHMENT FOR AN ELECTRIC FOOD MACHINE
Hartwig Kahlcke, Bad Soden, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Jul. 31, 1979, Ser. No. 62,856
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1979, 73 MR 8773
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—160

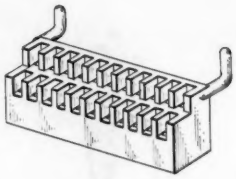


259,993
WASH BOARD
Walter A. Kunze, Corapolis, Pa., assignor to Cities Service Company, Tulsa, Okla.
Filed Apr. 12, 1979, Ser. No. 29,175
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—201



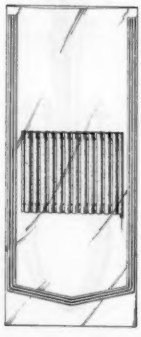
259,994
KEY BLANK
Joseph T. Salcedo, Rocky Mount, N.C., assignor to Unican Security Systems, Ltd., Montreal, Canada
Filed Nov. 8, 1979, Ser. No. 92,356
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—348

259,995
MULTIPOSITION PEGHOOK BRACKET
Marvin Zaro, New York, N.Y., assignor to Advertising Displays Company, Englewood, N.J.
Filed Dec. 20, 1979, Ser. No. 105,460
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



259,996
LUGGAGE ROLLER
Samuel R. Sheiman, Brooklyn, and Julius Sheiman, North Woodmere, both of N.Y., assignors to Crest Lock Company, Inc., New York, N.Y.
Filed Apr. 27, 1979, Ser. No. 33,868
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—375

259,997
SURGICAL INSTRUMENT PEEL POUCH
Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024
Filed May 18, 1979, Ser. No. 40,336
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—306

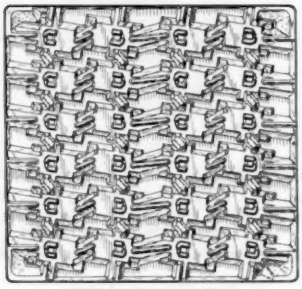


259,998

SHIPPING TRAY FOR DYNAMOELECTRIC MACHINES

Harold E. Wilkerson, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 13, 1979, Ser. No. 57,300
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424

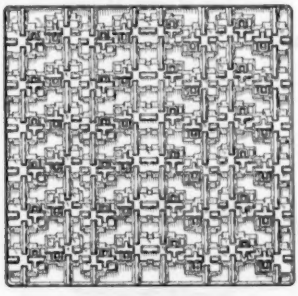


259,999

SHIPPING TRAY FOR DYNAMOELECTRIC MACHINES

Harold E. Wilkerson, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 13, 1979, Ser. No. 57,298
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424

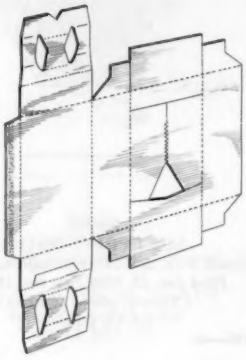


260,000

DISPLAY CARTON BLANK

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 26, 1978, Ser. No. 954,990
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433

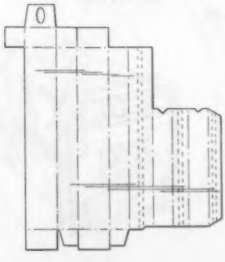


260,001

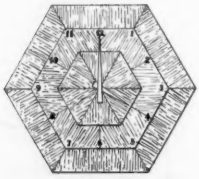
BLANK FOR FORMING AN EMERGENCY MEDICATION PACKAGE

Harold R. Jaeschke, Milwaukee, and Daniel J. Boyle, Hartland, both of Wis., assignors to Champion International Corporation, Stamford, Conn.

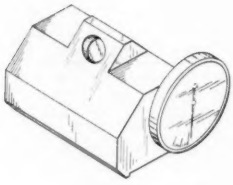
Filed Dec. 13, 1978, Ser. No. 969,250
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



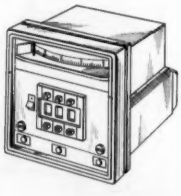
260,002
CLOCK
Robert F. Dokter, Rte. 2, Box 38A, Raymond, Wash. 98577
Filed Apr. 16, 1979, Ser. No. 30,115
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—21



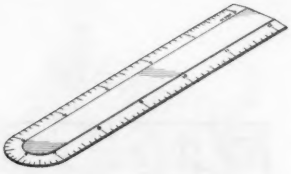
260,003
MELT POINT TESTER
John S. Burgett, P.O. Box 143, Farmington, Conn. 06032
Filed Jan. 23, 1980, Ser. No. 114,657
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



260,004
TEMPERATURE CONTROLLER
Yasuo Ohhasi, Kyoto; Minoru Ishikawa, Nagaokakyo; Kunio Nagata, Nagaokakyo, and Toshiaki Nagao, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Aug. 25, 1978, Ser. No. 936,917
Claims priority, application Japan, Feb. 28, 1978, 53-7635
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50



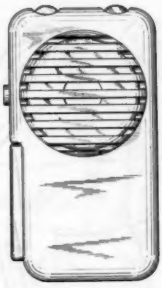
260,005
RULER
Max M. Sandfield, 3928 Wentwood Dr., Dallas, Tex. 75225
Filed Oct. 5, 1979, Ser. No. 82,145
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



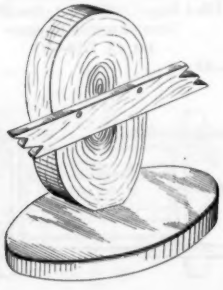
260,006
COMBINED SCALE AND TAPE MEASURE
Hon K. Woo, Flat C and D, Yip Fat Factory Bldg., 7th Floor, 77 Hoi Yuen Rd., Kwun Tong, Kowloon, Hong Kong
Filed Sep. 28, 1979, Ser. No. 80,090
Claims priority, application United Kingdom, Jun. 5, 1979, 990205
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—88

260,007
WEIGHING SCALE
Mark Leo, and Brenda Leo, both of 8381 Garden Grove Blvd., Apt. 6, Garden Grove, Calif. 92644
Filed Aug. 29, 1979, Ser. No. 70,813
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—92

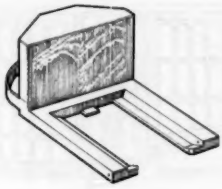
260,008
PERSONAL SECURITY ALARM
John Wistrand, New Canaan, Conn., assignor to Clairol Incorporated, New York, N.Y.
Filed Feb. 26, 1979, Ser. No. 15,514
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



260,009
SCULPTURE
Zelda Zieselman, 32 Dzamba Grove, Stamford, Conn. 06903
Filed Mar. 12, 1979, Ser. No. 19,768
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131

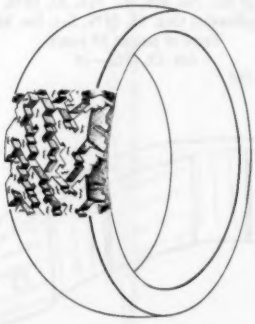


260,010
REMOTE CONTROLLED FORK TRUCK
Olof H. Lindfors, Goteborg, Sweden, assignor to Aktiebolaget Volvo, Goteborg, Sweden
Filed Nov. 24, 1978, Ser. No. 963,567
Claims priority, application Sweden, May 25, 1978, 781360
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57

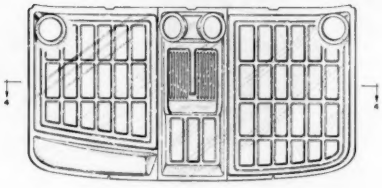


260,011
TRAILER
Neil E. Williams, 3101 Somerset Pl., Oklahoma City, Okla. 73116
Filed Jan. 17, 1979, Ser. No. 4,176
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102

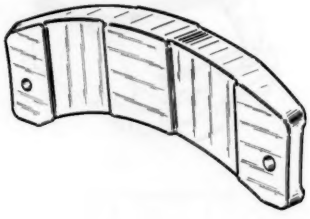
260,012
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Sep. 22, 1978, Ser. No. 945,038
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



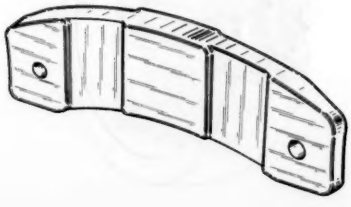
260,013
VEHICLE OVERHEAD CONSOLE
Fred O. Hoese, P.O. Box 41, Bulverde, Tex. 78216
Filed Jun. 18, 1979, Ser. No. 49,742
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



260,014
DISC BRAKE PAD YOKE
David D. Sheill, Farmington Hills, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Continuation of Ser. No. 878,958, Feb. 17, 1978, abandoned.
This application Oct. 12, 1979, Ser. No. 84,266
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180

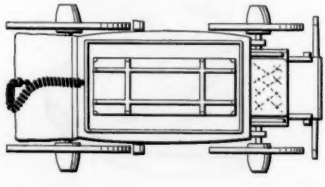


260,015
DISC BRAKE PAD YOKE
David D. Sheill, Farmington Hills, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Continuation of Ser. No. 879,662, Feb. 21, 1978, abandoned.
This application Oct. 12, 1979, Ser. No. 84,267
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180

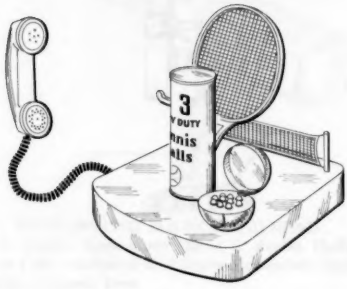


260,016
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed May 7, 1979, Ser. No. 36,594
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

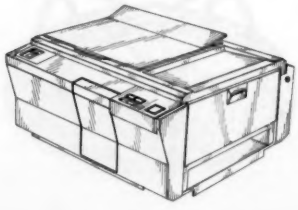
260,017
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed May 7, 1979, Ser. No. 36,596
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



260,018
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jul. 13, 1979, Ser. No. 57,280
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



260,019
ELECTROSTATIC COPIER
Yasuyoshi Onoue, and Toshio Yamamoto, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Japan
Filed Oct. 18, 1978, Ser. No. 952,576
Claims priority, application Japan, Apr. 28, 1978, 53-16830
Term of patent 3½ years
Int. Cl. D16—*03*
U.S. Cl. D16—31

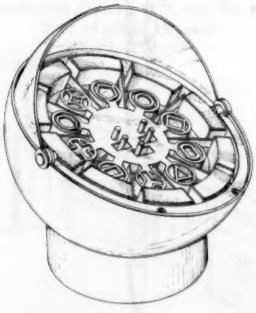


260,020
WRITING INSTRUMENT
Thomas H. DuBois, Van Nuys, Calif., and Theodore J. Peters, East Williston, N.Y., assignors to Jonathan Bradley Pens, Inc., Long Island City, N.Y.
Filed Jan. 21, 1980, Ser. No. 115,245
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—42

260,021
BALL-POINT PEN
Alain Carré, Paris, France, assignor to Waterman, S.A., Paris, France
Filed Jun. 11, 1979, Ser. No. 47,107
Claims priority, application France, Dec. 12, 1978, 77 111
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49

260,022
DECAL FOR CHILDRENS' GARMENTS
Arlene Kingston, 5059 W. Bloomfield Lake Rd., West Bloomfield, Mich. 48033
Continuation-in-part of Ser. No. 811,479, Jun. 30, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 63,325
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D20—11

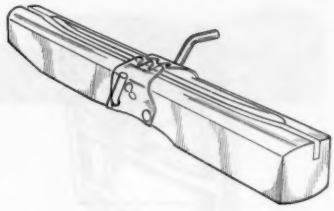
260,023
ELECTRONIC GAME CASING
David A. Pagani, Minnetonka, and Peter D. Pook, Bloomington, both of Minn., assignors to Leisure Dynamics, Inc., Minneapolis, Minn.
Filed Aug. 17, 1979, Ser. No. 67,700
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



260,024
SERVING MACHINE FOR USE IN PRACTICING VOLLEYBALL
Retsuo Saito, and Junji Nagase, both of Odawara, Japan, assignors to Kabushiki Kaisha Tokiwa Seisakusho, Odawara, Japan
Filed May 30, 1979, Ser. No. 43,830
Claims priority, application Japan, Jan. 29, 1979, 54-002962
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—210

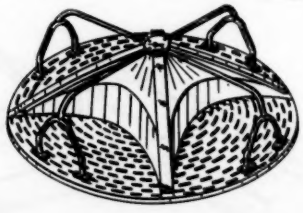
260,025
RACKET FRAME
David Epstein, 8A Ground Floor, Tung Shan Ter., Stubbs Rd., Hong Kong, Hong Kong
Filed Jan. 25, 1979, Ser. No. 6,962
Claims priority, application United Kingdom, Aug. 1, 1978, 985722/78
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212

260,026
GUARD FOR SKATE BLADES
Ingvar Rosen, PL 2372, 790 30 Insjön, Sweden
Filed Nov. 6, 1978, Ser. No. 957,776
Claims priority, application Sweden, May 11, 1978, 781257
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—225

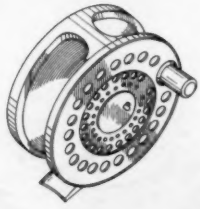


260,027
PLAYGROUND BOUNCE AND BEND
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,362
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—245

260,028
PLAYGROUND MERRY-GO-ROUND
Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Oct. 1, 1979, Ser. No. 80,384
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—249

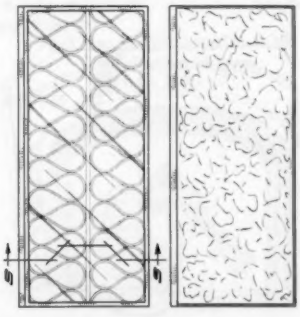


260,029
FISHING REEL
George E. Gehrke, P.O. Drawer 1204, Salida, Colo. 81201
Filed Oct. 9, 1979, Ser. No. 82,648
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

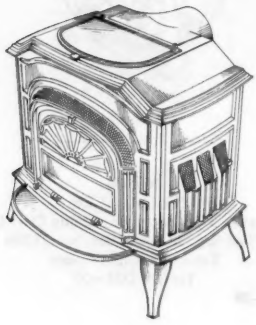


260,030
FISHING LURE
William T. Neavin, 3736 Berry Dr., Studio City, Calif. 91604
Filed Sep. 20, 1979, Ser. No. 77,386
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

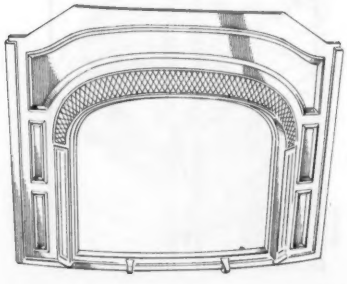
260,031
SOLAR HEATING PANEL
Darrell A. Pearson, Rock Falls, Iowa, assignor to Lord's Power Company, Inc., New Richland, Minn.
Filed Apr. 19, 1979, Ser. No. 31,495
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72



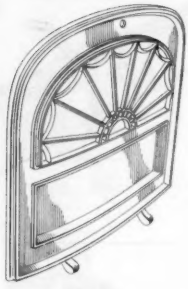
260,032
WOOD BURNING STOVE
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.
Filed Oct. 19, 1979, Ser. No. 86,519
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



260,033
FRONT FOR A WOOD BURNING STOVE
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.
Filed Oct. 19, 1979, Ser. No. 86,517
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—128

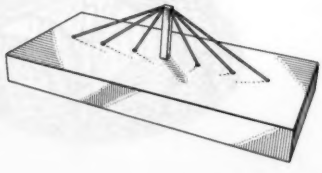


260,034
DOOR FOR A WOOD BURNING STOVE
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.
Filed Oct. 19, 1979, Ser. No. 86,520
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—128



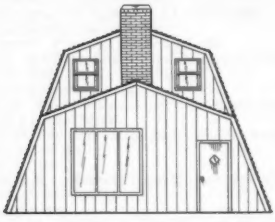
260,035
SPHYGMOMANOMETER PRESSURE GAUGE
Emanuel Berliner, Valley Stream, N.Y., assignor to Bristoline, Inc., Freeport, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,146
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—21

260,036
CABLE STAY BUILDING
Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133
Filed Dec. 10, 1979, Ser. No. 102,123
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—1

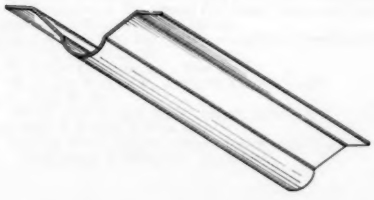


260,037
RESTAURANT BUILDING
Gerald S. Office, Jr., New Carlisle, Ohio, assignor to Ponderosa System, Inc., Vandalia, Ohio
Filed Oct. 29, 1979, Ser. No. 88,910
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17

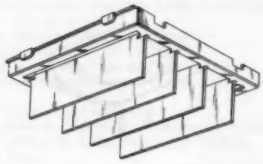
260,038
BUILDING
W. Don Wiley, P.O. Box 66, Foster, Okla. 73039
Filed Jun. 15, 1979, Ser. No. 49,020
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—24



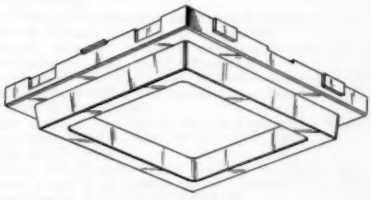
260,039
CEILING PANEL ELEMENT
Cornelis B. de Ruiter, Dordrecht, Netherlands, assignor to Hunter Douglas N.V., Curaco, Netherlands Antilles
Filed Nov. 9, 1978, Ser. No. 959,160
Claims priority, application Benelux, May 16, 1978, 5273501; May 16, 1978, 5273502
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



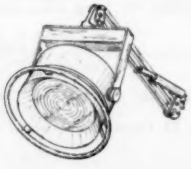
260,040
TRANSLUCENT INTERLOCKING PANEL MEMBER FOR CEILINGS OR THE LIKE
Edward J. Maresca, Fort Lauderdale, Fla., assignor to Cal-Mar Industries, Inc., Miami, Fla.
Filed Nov. 13, 1979, Ser. No. 93,393
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



260,041
TRANSLUCENT INTERLOCKING PANEL MEMBER FOR CEILINGS OR THE LIKE
Edward J. Maresca, Fort Lauderdale, Fla., assignor to Cal-Mar Industries, Inc., Miami, Fla.
Filed Nov. 13, 1979, Ser. No. 93,394
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



260,042
EXAMINATION LIGHT
Thomas Brendgord, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Mar. 9, 1979, Ser. No. 19,269
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—65

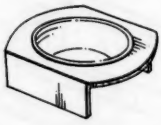


260,043

PET FEEDING CENTER

Paul H. Robinson, 465 Legace Ave., Dorval, Quebec, Canada (H9S 5J6)

Filed Sep. 11, 1979, Ser. No. 74,430
Claims priority, application Canada, Mar. 23, 1979, 23-03-79-1; Apr. 27, 1979, 27-04-79-1
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16

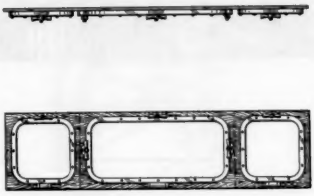


260,044

AQUARIUM COVER

Osvaldo J. Lorenzo, Box 29545, 65th Infantry Station, Rio Piedras, P.R. 00929

Filed Sep. 19, 1979, Ser. No. 77,077
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JULY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Lundberg Associates, Inc.: *See*—
Guthrie, Elmer F.; and Lundberg, Lennart A., 4,280,284, Cl. 34-60.000.

A/S Alfred Thomsen: *See*—
Thomsen, Alfred, 4,280,663, Cl. 239-685.000.

Aardee Spring & Lock Company Limited: *See*—
McCoag, John, 4,280,726, Cl. 292-327.000.

AB Aiser: *See*—
Eng, Kjell; and Bengtsson, Anders G., 4,280,342, Cl. 66-177.000.

AB Asea-Atom: *See*—
Liljegren, Lennart, 4,280,906, Cl. 210-282.000.

AB Bergu Jarn- & Rorkonstruktioner: *See*—
Henryson, Leif A. S., 4,280,787, Cl. 414-786.000.

AB Gemla Plast: *See*—
Nilsson, Gosta, 4,280,647, Cl. 227-147.000.

Abe, Kazunobu; and Nakatsuji, Tadao, to Sakai Chemical Industry Co., Ltd. Method for producing a catalyst and a carrier therefor. 4,280,926, Cl. 252-430.000.

Abeles, Benjamin, to RCA Corporation. Precoated resistive lens structure for electron gun and method of fabrication. 4,281,270, Cl. 313-444.000.

Abend, Phillip G., to Quad Chemical Corporation. Tertiary amines for use in water base hair care compositions. 4,281,201, Cl. 564-506.000.

Aberg, Per. Gas driven gyroscope. 4,280,366, Cl. 74-5.700.

Abraham, Fayez F.: *See*—
Perez, Arthur; and Abraham, Fayez F., 4,280,335, Cl. 62-332.000.

Acco Industries Inc.: *See*—
Kerr, Douglas M.; Crandall, Thomas L.; and Scalf, Daniel J., 4,280,413, Cl. 105-150.000.

ACF Industries, Inc.: *See*—
Vorwerk, Frederick E., 4,280,706, Cl. 277-12.000.

Ackerman, Bernard, to Electro-Catheter Corporation. Bipolar electrode insertion apparatus. 4,280,503, Cl. 128-419.00P.

Acme Resin Corporation: *See*—
Craig, Robert S., 4,281,090, Cl. 525-501.000.

Adam, Fritz G., to ITT Industries, Inc. Integrated IGFET constant current source. 4,281,261, Cl. 307-270.000.

Adam Heldmann Kunststoffverarbeitung: *See*—
Wiesenberger, Alfred; Mager, Lutz; Kolb, Erich; and Kreim, Karl, 4,280,634, Cl. 220-270.000.

Adams, Clyde O., III; and Fitch, James F., Jr. Solids eliminator. 4,280,665, Cl. 241-62.000.

Adcock, James L.: *See*—
Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., 4,281,119, Cl. 544-106.000.

Aeration Industries: *See*—
Durda, Daniel J.; and Quigley, John T., 4,280,911, Cl. 210-629.000.

Agarwal, Maya, to Goodyear Tire & Rubber Company, The. Linear random copolyester pigment binders. 4,281,104, Cl. 528-302.000.

Agency of Industrial Science and Technology, The: *See*—
Suzuki, Osamu; Jigami, Yoshifumi; Nakasato, Satoshi; and Hashimoto, Tetsutaro, 4,281,064, Cl. 435-134.000.

Agricola, Manfred; Dietze, Klaus; Mayr-Stein, Horst; Reimer, Karl-Heinz; Reinhold, Andreas; Schmid, Adolf; and Schosnig, Johannes-Georg. Circuit arrangement for telecommunications especially telephone installations that switch through digitally by time division. 4,281,410, Cl. 370-110.000.

Agricultural Research & Development Inc.: *See*—
Laurenz, Frank R., 4,280,447, Cl. 119-28.000.

AHI Operations Limited: *See*—
Phillips, Evan M., 4,280,445, Cl. 119-14.020.

Ahlers, Utz-Udo: *See*—
Weber, Adolf; Rhau, Siegfried; and Ahlers, Utz-Udo, 4,280,408, Cl. 102-501.000.

Ahrens, Frederick W.; and Kartsounes, George T., to United States of America, Energy. Compressed air energy storage system. 4,281,256, Cl. 290-1.00R.

Ahrweiler, Karl-Heinz, to Kusters, Eduard. Hydraulically controlled variable deflection roll. 4,280,262, Cl. 29-116.0AD.

Ahuja, Sudhir R.; and Sharma, Dhiraj K., to Bell Telephone Laboratories, Incorporated. Distributed first-come first-served bus allocation apparatus. 4,281,381, Cl. 364-200.000.

Ainoura, Masato. Shaving cutter and method of producing the same. 4,280,773, Cl. 407-27.000.

Air Preheater Company, Inc., The: *See*—
Stockman, Richard F., 4,280,554, Cl. 165-11.00R.

Airey, John E.: *See*—
Shetty, Bola V.; and Airey, John E., 4,281,138, Cl. 548-306.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Nishida, Kouji; Miyake, Osamu; Kawai, Taneichi; and Hamajima, Shigemitsu, 4,280,420, Cl. 112-103.000.

Aizawa, Kenshiro: *See*—
Ito, Tsugio; Aizawa, Kenshiro; and Okada, Hisashi, 4,281,225, Cl. 369-139.000.

Akatsuka, Tadami: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,281,181, Cl. 562-453.000.

Akebono Brake Industry Company, Ltd.: *See*—
Ogiwara, Osao, 4,280,935, Cl. 260-3.000.

Akers, Richard L., to Du Pont de Nemours, E. I., and Company. Winding method and apparatus and product therefrom. 4,280,667, Cl. 242-43.00R.

Akhmadaliev, Makhammadzhon: *See*—
Mamatov, Juldash; Akhmadaliev, Makhammadzhon; and Kozhevnikov, Vladimir S., 4,281,114, Cl. 542-432.000.

Akiba, Yuichi: *See*—
Miura, Nobuo; and Akiba, Yuichi, 4,281,039, Cl. 428-159.000.

Akiyama, Toshiyuki: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Sato, Kazuhiro; Umemoto, Masuo; Akiyama, Toshiyuki; and Izumita, Morishi, 4,281,338, Cl. 358-44.000.

Akkala, Walter I.; and Gorshe, Thomas M., to American Can Company. Packaging apparatus. 4,280,313, Cl. 53-175.000.

Aktiebolaget Electrolux: *See*—
Soderstrom, Sigvard V., 4,280,528, Cl. 137-408.000.

Aktiebolaget IRO: *See*—
Lindstrom, Fred B., 4,280,668, Cl. 242-47.120.

Aktiengesellschaft Kuhnle, Kopp & Kausch: *See*—
Pfeil, Horst, 4,280,797, Cl. 417-406.000.

Aktieselskabet Niro Atomizer: *See*—
Hauberg, Georg H. H.; Krag, Jens; and Pisecky, Jan, 4,281,024, Cl. 426-471.000.

Akzona Incorporated: *See*—
McNeely, Gerald W., 4,280,441, Cl. 116-219.000.

Albany International Corp.: *See*—
Eckerdt, Lawrence W., 4,280,869, Cl. 162-252.000.

Alberta Energy Company Ltd.: *See*—
Jagodzinski, Richard F.; and Kerr, Richard K., 4,280,990, Cl. 423-574.00R.

Alberta Oil Sands Technology and Research Authority: *See*—
Taciuk, William, 4,280,879, Cl. 202-100.000.

Albertinetti, Nedo P., to Itek Corporation. Piezoelectric bi-morph mirror actuator. 4,280,756, Cl. 350-360.000.

Albrecht, Robert G., to Wismer & Becker Contracting Engineers. Multi-directional lifting and handling attachment for a crane boom. 4,280,785, Cl. 414-735.000.

Albright, James A., to Velsicol Chemical Corporation. Reactive phosphate flame retardants. 4,281,097, Cl. 528-72.000.

Albright, Jay D.: *See*—
Dusza, John P.; and Albright, Jay D., 4,281,000, Cl. 424-251.000.

Alderson, Loren L., to Cessna Aircraft Company, The. Bale density control system. 4,280,403, Cl. 100-43.000.

Alessio, Lorenzo E.; and Cuneo, Giuseppe, to Black & Decker Inc. Cutterhead for a portable power planer. 4,280,542, Cl. 144-230.000.

Alexandersson, Sven, to Bruun & Sorensen AB. Incineration plant. 4,280,417, Cl. 110-346.000.

Alfa Romeo S.p.A.: *See*—
Bassi, Aldo; Radaelli, Dario; and Rogora, Edoardo, 4,280,460, Cl. 123-382.000.

Allen-Bradley Company: *See*—
Grants, Valdis; Schultz, Ron; and McAdams, Timothy E., 4,281,392, Cl. 364-900.000.

Allen, John R.; Desrochers, Louis-Georges; and Loyer, Alain, to C-I-L Inc. Explosive package assembly. 4,280,407, Cl. 102-320.000.

Allied Chemical Corporation: *See*—
Armor, John N.; and Carlson, Emery J., 4,281,194, Cl. 564-267.000.
Bean, Samuel L.; Swaine, James W., Jr.; and Crawford, Paul R., 4,280,553, Cl. 165-1.000.

Allis-Chalmers Corporation: *See*—
Bliemeister, Robert M., 4,280,707, Cl. 277-84.000.
Naylor, Carl A., 4,281,230, Cl. 200-61.58R.

Allshouse, Roger S.; and Marek, Donald C. Anti-vandalism, sectionalized panel, outside metal guard for windshield. 4,280,414, Cl. 109-49.500.

Aluminum Company of America: *See*—
Dameron, H. Clifford, Jr.; Brouwer, Nicholaas L.; and Martin, Guy E., 4,280,857, Cl. 148-156.000.

Alvey, Inc.: *See*—
Kloster, Kenneth D., 4,280,602, Cl. 188-322.000.

AMAX Magnesium Corporation: *See*—
Neelameggham, Ramaswami, 4,280,891, Cl. 204-243.00R.

Ambros, Peter; and Geyer, Hermann, to Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co. Non-conductive substrate for a printed circuit and method of manufacture. 4,281,038, Cl. 428-131.000.

American Air Filter Company, Inc.: *See—*
Timms, Rayford W.; and Waidmann, Raymond C., 4,280,595, Cl. 188-31.000.

American Can Company: *See—*
Akkala, Walter I.; and Gorshe, Thomas M., 4,280,313, Cl. 53-175.000.

American Cyanamid: *See—*
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Lai Chen, Sow-Mei, 4,281,153, Cl. 560-118.000.

American Cyanamid Company: *See—*
Dusza, John P.; and Albright, Jay D., 4,281,000, Cl. 424-251.000.
Shepherd, Robert G., 4,281,018, Cl. 424-310.000.
Shepherd, Robert G., 4,281,019, Cl. 424-330.000.

American Home Products Corp.: *See—*
Kraft, Thomas L.; Vick, Howard A.; and Hossom, Miles G., 4,281,387, Cl. 364-497.000.

American Hospital Supply Corporation: *See—*
Jackson, Barry N., 4,280,487, Cl. 128-33.000.

American Petro Mart, Inc.: *See—*
Carlson, Lee G., 4,280,904, Cl. 210-676.000.

American Science and Engineering, Inc.: *See—*
Jarva, Curt W., 4,281,325, Cl. 340-870.290.

American Standard Inc.: *See—*
Hempel, Rodney A., 4,280,473, Cl. 126-120.000.

Ammann, Charles L., to General Electric Company. Method for constructing a turbine shroud. 4,280,975, Cl. 264-81.000.

Anchor Brush Company, Inc.: *See—*
Slaughter, Bobby L., 4,280,629, Cl. 215-1.00C.

Anciaux widow Vastesaeger, Martine: *See—*
Michel, Joseph P., 4,281,073, Cl. 525-11.000.

Anderson, Burton C.; and Frazer, August H., to Du Pont de Nemours, E. I., and Company. Heat-resistant, rigid polymers from difunctional 9,10-dihydro-9,10-ethanoanthracenes. 4,281,106, Cl. 528-344.000.

Anderson, James E.: *See—*
Balch, James L.; Anderson, James E.; and Sadeski, Boleslaus J., 4,280,614, Cl. 198-425.000.

Anderson, Lawrence F. Automatic collision warning target display system. 4,281,326, Cl. 343-5.0EM.

Anderson, Williard W.: *See—*
Groom, Nelson J.; Anderson, Williard W.; and Phillips, William H., 4,281,384, Cl. 364-453.000.

Andersson, Ake. Garment pressing machine. 4,280,290, Cl. 38-31.000.

Andis, Michael D.: *See—*
Steelman, Carrol D.; Chambers, Doyle M.; and Andis, Michael D., 4,280,999, Cl. 424-251.000.

Andrews, Charles L.; and Belden, Lorne H., Jr., to General Electric Company. Magnetic tape leads for probes in electromagnetic radiation. 4,281,287, Cl. 324-95.000.

Anezaki, Syoji: *See—*
Marukawa, Katsukiyo; Yamazaki, Isao; Anezaki, Syoji; and Kajimoto, Tsutomu, 4,280,838, Cl. 75-60.000.

Angell, Daniel K.: *See—*
Ovshinsky, Stanford R.; Angell, Daniel K.; and Yu, Terry T., 4,281,058, Cl. 430-296.000.

Anheuser-Busch, Incorporated: *See—*
Hunt, Walter G.; Kovats, Leslie P.; and Bovier, Edward M., 4,281,111, Cl. 536-111.000.

Animal Toys Plus, Inc.: *See—*
Hills, Isaac A., 4,280,292, Cl. 40-538.000.

Anno, James N.: *See—*
Fawcett, Sherwood L.; and Anno, James N., 4,280,325, Cl. 60-370.000.

Ansen, Jakob; Duill, Helmut; and Fasbender, Heinz, to Klockner-Humboldt-Deutz AG. Method and device for the operation of a hot gas generator within a dryer. 4,280,283, Cl. 34-10.000.

Anstalt fuer Schliesstechnik: *See—*
Bardfeld, Rosalia, 4,280,599, Cl. 188-310.000.

Antos, George J., to UOP Inc. Hydrocarbon dehydrocyclization with an acidic multimetallic catalytic composite. 4,280,899, Cl. 208-139.000.

Antos, George J., to UOP Inc. Nonacidic multimetallic catalytic composite. 4,280,930, Cl. 252-466.00B.

Aoyagi, Takaaki: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,281,180, Cl. 562-448.000.

Applegate, Charles S.; and Erickson, Paul R., to Envirex, Inc. Water purification process. 4,280,913, Cl. 210-669.000.

Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, to Minolta Camera Kabushiki Kaisha. Sequential control circuit means. 4,280,763, Cl. 355-14.00R.

Arai, Yoshio. Sealing device for engine piston. 4,280,708, Cl. 277-171.000.

Arbit, Harold A., to Mobil Oil Corporation. Blends of poly(p-methylstyrene) with polyfunctional monomer. 4,281,083, Cl. 525-305.000.

Archer, William R., to General Electric Company. Electrical circuit for producing controlled high voltage AC output. 4,281,374, Cl. 363-41.000.

Arima, Takao: *See—*
Watanabe, Haruo; Watanabe, Mutsuhito; Arima, Takao; and Yamada, Kosei, 4,280,962, Cl. 260-424.000.

Arkans, Edward J., to Kendall Company, The. Compression device with simulator. 4,280,485, Cl. 128-24.00R.

Arliguie, Jean-Claude M.; Buisson, Marc F. B.; and Caruel, Jacques E. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Fuel distribution device. 4,280,324, Cl. 60-261.000.

Armor, John N.; and Carlson, Emery J., to Allied Chemical Corporation. Process for ammoximation of cyclohexanone. 4,281,194, Cl. 564-267.000.

Armour and Company: *See—*
Jensen, James H., 4,280,618, Cl. 198-782.000.

Armstrong, Donald E.: *See—*
Mecone, David W.; Hartman, Donald W.; and Armstrong, Donald E., 4,281,363, Cl. 362-6.000.

Armstrong World Industries, Inc.: *See—*
Harris, Thomas G., 4,281,069, Cl. 521-123.000.

Arvanitis, Aristotelis S., to Motorola, Inc. Multi-pole crystal filter and method of improving the frequency response. 4,281,300, Cl. 333-192.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Miyake, Tetsuya; Ogawa, Norito; Inada, Kohji; and Takeda, Kunihiko, 4,280,984, Cl. 423-6.000.

Asai, Kiyotsugu: *See—*
Saito, Takashi; Asai, Kiyotsugu; and Kawabata, Toshihiko, 4,280,944, Cl. 260-29.2TN.

Asano, Atsushi: *See—*
Suzuki, Ryo; Asano, Atsushi; Takeshita, Masatoshi; and Takeuchi, Teruaki, 4,281,395, Cl. 365-15.000.

Asano, Takehiko: *See—*
Nishimura, Satoshi; Shimizu, Tetsuo; Sato, Kenichi; and Asano, Takehiko, 4,281,295, Cl. 333-14.000.

ASEA Aktiebolag: *See—*
Brogardh, Torgny; and Stensland, Leif, 4,281,245, Cl. 250-227.000.

Ashby, Bruce A., to General Electric Company. Method of neutralizing a halogen silicone compound. 4,281,146, Cl. 556-456.000.

Atalla, Martin M., to Atalla Technovations. Method and apparatus for securing data transmissions. 4,281,215, Cl. 178-22.080.

Atalla Technovations: *See—*
Atalla, Martin M., 4,281,215, Cl. 178-22.080.

Atlantic Richfield Company: *See—*
Kesling, Haven S., Jr., 4,281,173, Cl. 560-204.000.

Atterbury, Thomas: *See—*
Stutz, David E.; Atterbury, Thomas; and Scharenberg, William F., Jr., 4,281,284, Cl. 324-58.00A.

Austin, Len S., to McDonnell Douglas Corporation. Computer driven control system for a numerically controlled machine tool. 4,281,379, Cl. 364-102.000.

Australasian Training Aids (Pty.) Ltd.: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,281,241, Cl. 235-400.000.

Autoclave Engineers, Inc.: *See—*
Smith, Charles W., Jr.; Zimmerman, Franz X.; and Walker, William H., 4,280,807, Cl. 432-205.000.

Automobiles Peugeot: *See—*
Goguet, Jean A., 4,280,340, Cl. 64-21.000.

Automotive Products Limited: *See—*
Hales, Eric C., 4,280,739, Cl. 303-6.00C.
Kanwar, Randhir, 4,280,603, Cl. 188-343.000.

Avco Corporation: *See—*
Hartel, Edward O.; and Dale, John N., 4,280,792, Cl. 415-117.000.

Axen, Udo F.; and Sih, John C., to Upjohn Company, The. 2,5-Inter-o-phenylene-3,4-dinor-6,9α-epoxy-6β-5-iodo-PGF$_1$ compounds. 4,281,113, Cl. 542-426.000.

B. F. Goodrich Company, The: *See—*
Baker, Charles F., Jr., 4,280,620, Cl. 198-825.000.
Brown, Eugene W., 4,280,239, Cl. 9-11.00A.

B R International: *See—*
White, Fred C., 4,280,544, Cl. 152-221.000.

Babb, James H.; and Cox, Johnny C., to Demco, Inc. Method and apparatus for recovery of silver employing an electrolytic cell having improved solution movement. 4,280,884, Cl. 204-109.000.

Back, Gayle E., to Gulf Oil Corporation. Method of stabilizing soil-applied dimethylcarbamyltriazoles. 4,281,007, Cl. 424-269.000.

Baer, Massimo, to Monsanto Company. Polyarylene ester compositions. 4,281,079, Cl. 525-152.000.

Baggett, William M.: *See—*
Shen, Hsiang-Sheng; Plischke, LeMoyne W.; Baggett, William M.; and Osborne, Franklin T., 4,280,860, Cl. 156-167.000.

Bagshaw, David P.: *See—*
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,280,478, Cl. 126-420.000.

Baker, Charles F., Jr., to B. F. Goodrich Company, The. Laterally flexible conveyor belt. 4,280,620, Cl. 198-825.000.

Baker, Donal E., to Westinghouse Electric Corp. Cycloconverter with waveform improving nonlinear feedback. 4,281,371, Cl. 363-10.000.

Baker International Corporation: *See—*
Beimgraben, Herbert W., 4,280,524, Cl. 137-268.000.

Baker, John E., to E M I-Varian Limited. Spin tuned magnetron having load sharing bearing arrangements. 4,281,273, Cl. 315-39.610.

Baker, Ross G., Jr.; and Van Calfee, Richard, to Intermedics, Inc. Tachycardia arrester. 4,280,502, Cl. 128-419.0PG.

Balaban, Stephen M.; and Cox, Raymond C., to Monsanto Company. Preparation of sodium dichloro-s-triazine trione compositions. 4,281,122, Cl. 544-190.000.

Balch, James L.; Anderson, James E.; and Sadeski, Boleslaus J., to Oscar Mayer & Company, Inc. System for offloading articles from a conveyor belt. 4,280,614, Cl. 198-425.000.

Baldwin, John J., to Merck & Co., Inc. Novel 2-pyridylimidazole compounds. 4,281,005, Cl. 424-263.000.

Ball Corporation: *See*—
Murphy, Kelly J., 4,280,353, Cl. 72-345.000.

Bank Computer Network Corporation: *See*—
Burnett, Bradley W.; Fiterman, Charles E.; and Fish, Leonard A., 4,281,323, Cl. 340-712.000.

Banks, Reginald G. S.; and Williams, Alan, to British Gas Corporation. Steam reforming process. 4,280,820, Cl. 48-214.00A.

Bantick, John R.: *See*—
Chamberlain, Terence R.; and Bantick, John R., 4,281,008, Cl. 424-269.000.

Bardfeld, Rosalia, to Anstalt fuer Schliesstechnik. Brake apparatus, especially for door closers. 4,280,599, Cl. 188-310.000.

Barnes, Arthur C.: *See*—
Barnes, Carl E.; and Barnes, Arthur C., 4,281,105, Cl. 528-313.000.

Barnes, Carl E.; and Barnes, Arthur C. Formation of particulate polypyrrolidone. 4,281,105, Cl. 528-313.000.

Barrada, M. Ismail. Method for positioning a fluid withdrawing means by detecting local temperature. 4,280,508, Cl. 128-736.000.

Barrus, Gordon B.; and Matula, Jerry, to Printronix, Inc. Printer having variable hammer release drive. 4,280,404, Cl. 101-93.030.

Barthell, Eduard: *See*—
Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, 4,281,186, Cl. 564-46.000.

Bartl, Herbert; and Mietzsch, Fritz, to Bayer Aktiengesellschaft. Graft polymers of polysaccharide esters. 4,280,937, Cl. 260-17.00A.

Barton, James I. Boat mooring apparatus. 4,280,440, Cl. 114-230.000.

Bartow, Richard J., to Clark Equipment Company. Full free-lift upright for lift truck. 4,280,592, Cl. 187-9.00E.

BASF Aktiengesellschaft: *See*—
Baumann, Hans, 4,280,955, Cl. 260-149.000.
Grychtol, Klaus, 4,280,964, Cl. 260-465.00D.
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,280,260, Cl. 28-255.000.
Stoeckigt, Dieter; Kiessling, Dieter; Perner, Johannes; Trieselt, Wolfgang; and Trapp, Horst, 4,280,919, Cl. 252-135.000.
Strobele, Caljon H., 4,281,346, Cl. 358-166.000.

BASF Wyandotte Corporation: *See*—
Kienzle, Charles; Gebura, Stanley E.; and Boghosian, John W., 4,281,067, Cl. 521-56.000.
Langdon, William K., 4,281,199, Cl. 564-475.000.

Bassi, Aldo; Radaelli, Dario; and Rogora, Edoardo, to Alfa Romeo S.p.A. Automatic regulator of the idling in an internal-combustion engine. 4,280,460, Cl. 123-382.000.

Bassist, Rudolph G. Method of knitting a velour lace fabric. 4,280,259, Cl. 28-160.000.

Bassompierre-Sewrin, Christian C., to Martech International, Inc. Underwater trenching machine for burying pipeline and the like. 4,280,289, Cl. 37-63.000.

Bastida, Ezio M., to C.I.S.E. Centro Informazioni Studi Esperienze S.p.A. Instrument for measuring moisture in materials. 4,281,285, Cl. 324-58.50B.

Batte, Christopher L. Method and apparatus for solar power lighting. 4,281,369, Cl. 362-183.000.

Battelle Development Corporation: *See*—
Chauhan, Satya P.; Feldmann, Herman F.; Stambaugh, Edgel P.; and Liu, Ke-Tien, 4,280,817, Cl. 44-1.00R.
Fawcett, Sherwood L.; and Anno, James N., 4,280,325, Cl. 60-370.000.

Batting, Robert D.; Chabot, Donald G.; and Poland, Donald R., to Leesona Corporation. Product separation and granulation system. 4,280,626, Cl. 209-658.000.

Bauer, Henry C.; Burns, Gary J.; Buzzard, Clair A.; Gordon, Travis H.; Kahlbrock, Heinz; Ricca, Robert F.; and Zachok, Robert M., to Bell Telephone Laboratories, Incorporated. Collection of messages from data terminals using different protocols and formats. 4,281,315, Cl. 340-147.00R.

Baum, Heinz W., to Lucas Industries Limited. Brake wear indicator. 4,280,594, Cl. 188-1.00A.

Baumann, Edward J. Method and apparatus for controlling aeration in biological treatment processes. 4,280,910, Cl. 210-614.000.

Baumann, Hans, to BASF Aktiengesellschaft. Sulfo, chloro phenolazoacetoacetylbenzamide dyes. 4,280,955, Cl. 260-149.000.

Baumann, Werner, to Sandoz Ltd. 3-Dicyanomethylidene-2,3-dihydrothiophen-1,1-dioxide derivatives. 4,281,115, Cl. 542-441.000.

Baumert, Dietrich: *See*—
Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., 4,281,121, Cl. 544-134.000.

Baxter Travenol Laboratories, Inc.: *See*—
Van Baelen, Armand R., 4,280,496, Cl. 128-214.00R.

Bayer Aktiengesellschaft: *See*—
Bartl, Herbert; and Mietzsch, Fritz, 4,280,937, Cl. 260-17.00A.
Berger-Lohr, Bernd; Schundehutte, Karl H.; and Soll, Manfred, 4,281,124, Cl. 544-208.000.
de Montigny, Armand; and Moretto, Hans-Heinrich, 4,281,144, Cl. 556-416.000.
Dunwald, Willi; Lewalter, Jurgen; Merten, Rudolf; Rottmaier, Ludwig; Schulte, Bernhard; and Meyer, Karl-Heinrich, 4,281,095, Cl. 528-49.000.
Franckowiak, Gerhard; Bossert, Friedrich; Heise, Arend; and Towart, Robertson, 4,280,998, Cl. 424-250.000.
Frank, Walter; Bendszus, Otto; Freier, Hans J; and Traenckner, Hans-Joachim, 4,281,068, Cl. 521-62.000.
George, Joachim, 4,281,195, Cl. 564-271.000.
Lehment, Klaus-Friedrich; Raue, Roderich; and Gleinig, Harald, 4,281,112, Cl. 542-417.000.
Nonn, Konrad; Walz, Klaus; Wolf, Karlheinz; and Boehmke, Gunther, 4,280,960, Cl. 260-403.000.
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; Lehnert, Gunther; and Lindner, Christian, 4,281,101, Cl. 528-196.000.
Schreiner, Kurt; Jager, Horst; and Schwaebel, Richard, 4,280,956, Cl. 260-242.200.
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,281,011, Cl. 424-277.000.
Zecher, Wilfried; and Merten, Rudolf, 4,281,140, Cl. 548-313.000.

Bayer, Eric W.; and Palmisano, Edward A., to General Electric Company. Static trip unit for molded case circuit breakers. 4,281,359, Cl. 361-115.000.

Bayer, Franz; Schubert, Hermann; and Kagerhuber, Franz, to Voest-Alpine Aktiengesellschaft. Driving roll stand for a continuous casting plant. 4,280,552, Cl. 164-448.000.

BBC Brown, Boveri & Co Limited: *See*—
vonAllmen, Martin; and Wittmer, Marc, 4,281,236, Cl. 219-121.0LC.

BBC Brown, Boveri & Company, Ltd.: *See*—
Pouillange, Jean-Paul, 4,281,375, Cl. 363-37.000.

Bean, Samuel L.; Swaine, James W., Jr.; and Crawford, Paul R., to Allied Chemical Corporation. System and process for storing energy. 4,280,553, Cl. 165-1.000.

Bearden, Roby; and Stuntz, Gordon F., to Exxon Research & Engineering Co. Passivation of cracking catalysts. 4,280,896, Cl. 208-113.000.

Bearden, Roby: *See*—
Stuntz, Gordon F.; and Bearden, Roby, 4,280,895, Cl. 208-113.000.

Beazley, Dwight: *See*—
Salmon, John K.; and Beazley, Dwight, 4,280,600, Cl. 188-312.000.

Bechard, Conrad E.; Davenport, John M.; and Lynch, Denis A., Jr., to General Electric Co. Discharge lamp having vitreous shield. 4,281,274, Cl. 315-49.000.

Becker, Rudolf, to Liebherr-Werk Ehingen GmbH. Heavy-duty crane with counterweight. 4,280,627, Cl. 212-198.000.

Becker, Werner: *See*—
Poetsch, Dieter; Becker, Werner; Klein, Ottokar; and Wulf, Rudolf, 4,281,351, Cl. 358-214.000.

Beckerer, Frank S., Jr. Cover plate construction for boat decks. 4,280,434, Cl. 114-174.000.

Beckish, John. Golf swing training device. 4,280,701, Cl. 273-191.00A.

Beestman, George B.; and Deming, John M., to Monsanto Company. Encapsulation by interfacial polycondensation, and aqueous herbicidal composition containing microcapsules produced thereby. 4,280,833, Cl. 71-100.000.

Begin, Louis E.: *See*—
Dunbar, Joseph E.; and Begin, Louis E., 4,281,118, Cl. 544-85.000.

Behrenz, Wolfgang: *See*—
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,281,011, Cl. 424-277.000.

Beimgraben, Herbert W., to Baker International Corporation. Apparatus and method for closing a failed open fluid pressure actuated relief valve. 4,280,524, Cl. 137-268.000.

Beirne, Patrick R.: *See*—
Cowpland, Michael C. J.; and Beirne, Patrick R., 4,281,219, Cl. 179-18.0FA.

Belden, Lorne H., Jr.: *See*—
Andrews, Charles L.; and Belden, Lorne H., Jr., 4,281,287, Cl. 324-95.000.

Bell Telephone Laboratories, Incorporated: *See*—
Ahuja, Sudhir R.; and Sharma, Dhiraj K., 4,281,381, Cl. 364-200.000.
Bauer, Henry C.; Burns, Gary J.; Buzzard, Clair A.; Gordon, Travis H.; Kahlbrock, Heinz; Ricca, Robert F.; and Zachok, Robert M., 4,281,315, Cl. 340-147.00R.
Candy, James C.; and Wooley, Bruce A., 4,281,318, Cl. 340-347.0DD.
Chuang, Chin-Sheng; and LaMarche, Robert E., 4,281,218, Cl. 179-1.0SC.
Mounts, Frank W.; and Netravali, Arun N., 4,281,344, Cl. 358-136.000.
Silfvast, William T., 4,281,030, Cl. 427-42.000.

Belli, Frank G.: *See*—
Buckley, David A.; Ciccarelli, Roger N.; and Belli, Frank G., 4,281,050, Cl. 430-41.000.

Bellis, Harold E., to Du Pont de Nemours, E. I., and Company. Process for preparing substituted formamides. 4,281,193, Cl. 564-215.000.

Bendix Corporation, The: *See*—
Hemmer, Valentine J., 4,280,749, Cl. 339-177.00R.

Bendszus, Otto: *See*—
Frank, Walter; Bendszus, Otto; Freier, Hans J; and Traenckner, Hans-Joachim, 4,281,068, Cl. 521-62.000.

Bengtsson, Anders G.: *See*—
Eng, Kjell; and Bengtsson, Anders G., 4,280,342, Cl. 66-177.000.

Benkmann, Christian: *See*—
Lassmann, Eberhard; and Benkmann, Christian, 4,280,824, Cl. 55-26.000.

Bennett, Matthew C., Jr.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,281,382, Cl. 364-414.000.

Benoit, Robert A.: *See*—
Guillemin, Roger C. L.; Lavielle, Solange; Brazeau, Paul E., Jr.; Ling, Nicholas C.; and Benoit, Robert A., 4,280,953, Cl. 260-112.50S.

Benzing, J. Paige: *See*—
Siniscal, Paul D.; Hebert, David L.; and Benzing, J. Paige, 4,280,615, Cl. 198-470.000.

Berenson, Allen V., to Sunbeam Corporation. Safety circuit for electric bedcover. 4,281,237, Cl. 219-511.000.

Berg, Richard C.; and Kvall, Emil J., to Minnesota Mining and Manufacturing Company. Powered air respirator. 4,280,491, Cl. 128-201.240.

Berger-Lohr, Bernd; Schundehutte, Karl H.; and Soll, Manfred, to Bayer Aktiengesellschaft. Reactive quaternary compounds, their preparation and their use for increasing the affinity of anionic dyestuffs for fibres which contain nitrogen or hydroxyl groups. 4,281,124, Cl. 544-208.000.

Berger, Rupert: *See*—
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,280,688, Cl. 266-245.000.

Berginski, Werner, to Leopold Kostal, Firma. Ignition switch. 4,281,226, Cl. 200-44.000.

Berke, Carl M., to Polaroid Corporation. Method for forming noble metal silver precipitating nuclei. 4,281,056, Cl. 430-232.000.

Berke, Herbert: *See*—
Patz, Benjamin W.; Berke, Herbert; and Mendorf, Donald R., 4,281,361, Cl. 361-401.000.

Berkowitz, Irving L.; and Bourgeois, John J., to Kason Hardware Corporation. Safety closure system. 4,280,725, Cl. 292-223.000.

Berlin, Donald M., Jr.: *See*—
Zukausky, Keith E.; and Berlin, Donald M., Jr., 4,280,682, Cl. 251-251.000.

Berry, Fred M., to International Medical Electronics, Ltd. Electrostatic shield for diathermy treatment head. 4,281,362, Cl. 361-437.000.

Berry, W. James, III; and Berry, William J., to Darco Water Systems, Inc. Water purification unit and method. 4,280,912, Cl. 210-662.000.

Berry, William J.: *See*—
Berry, W. James, III; and Berry, William J., 4,280,912, Cl. 210-662.000.

Bertin, Claude L.; De La Moneda, Francisco H.; and Soderman, Donald A., to International Business Machines Corporation. Method of making a dual DMOS device by ion implantation and diffusion. 4,280,855, Cl. 148-1.500.

Besson, Rene; and Scherrer, Igor, to Ebauches S.A. Reduction of energy consumption of electronic timepiece. 4,281,405, Cl. 368-66.000.

Best, Donald A., to Exxon Production Research Company. Method for producing heavy crude. 4,280,559, Cl. 166-303.000.

Beta Manufacturing Corp.: *See*—
Poleschuk, Nicholas A.; and Purdy, Samuel E., 4,281,229, Cl. 200-52.00R.

Bethkenhagen, Jurgen; and Kolpe, Dieter. Valved blood sampling device. 4,280,509, Cl. 128-766.000.

Betts, William M. Device for holding flexible bags. 4,280,676, Cl. 248-97.000.

Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, to Siemens Aktiengesellschaft. Electrical filter circuit utilizing charge transfer devices formed as looped circuits. 4,281,296, Cl. 333-165.000.

Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, to Siemens Aktiengesellschaft. Electrical filter circuit utilizing charge transfer delay lines utilizing individual charge transfer delay elements. 4,281,297, Cl. 333-165.000.

Bhat, Waman V., to Boeing Company, The. Noise-suppressing jet engine nozzles and method. 4,280,587, Cl. 181-213.000.

Bianchi, Nereo: *See*—
Carbonato, Gianfranco; and Bianchi, Nereo, 4,280,424, Cl. 112-158.00E.

Bible, Harley V.; and Moon, William T., Jr., to Robertshaw Controls Company. Control unit and method of making the same. 4,280,532, Cl. 137-882.000.

Bilsky, Herbert W.; and Callen, Patrick J., to RCA Corporation. Redundant battery protection system. 4,281,278, Cl. 320-13.000.

Biotronik Mess-und Therapiegerate G.m.b.H. & Co.: *See*—
Karr, Dieter E.; and Shanks, Scott B., 4,280,512, Cl. 128-785.000.

Bird, Peter A.: *See*—
Gitelman, Ephraim; Marston, Glendon P.; and Bird, Peter A., 4,281,393, Cl. 364-900.000.

Bird & Son, Inc.: *See*—
Cunning, Joseph M., 4,280,399, Cl. 98-42.00A.

Bischoff, Martin: *See*—
Rutzen, Horst; Heidrich, Jochen; Bischoff, Martin; Kloubert, Udo; Waltenberger, Peter; and Wegener, Ingo, 4,281,196, Cl. 564-292.000.

Bishop, Thomas G., to HPM Corporation. Combination thermoplastic and glass loaded thermosetting injection molding machine and method for operating same. 4,280,972, Cl. 264-39.000.

Bittner, Friedrich: *See*—
Hentschel, Klaus; and Bittner, Friedrich, 4,281,123, Cl. 544-194.000.

Bivens, Joseph R.; Lyerly, William M.; and Simmons, Walter J., to Du Pont de Nemours, E. I., and Company. Organic grouting composition for anchoring a bolt in a hole. 4,280,943, Cl. 260-29.20E.

Black & Decker Inc.: *See*—
Alessio, Lorenzo E.; and Cuneo, Giuseppe, 4,280,542, Cl. 144-230.000.
Chaconas, Peter C.; and Schafebook, Richard A., 4,280,776, Cl. 408-72.00R.

Blanc, Ernst: *See*—
Wurster, Helmut; and Blanc, Ernst, 4,281,366, Cl. 362-32.000.

Blaylock, Tommy J. Clutch throw-out bearing plate. 4,280,607, Cl. 192-98.000.

Bleicher, Manfred: *See*—
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,280,359, Cl. 73-123.000.

Blevins, Jan M.: *See*—
Homan, Gary R.; and Blevins, Jan M., 4,281,094, Cl. 528-30.000.

Bliemeister, Robert M., to Allis-Chalmers Corporation. Seal for rotating cylinder such as kilns and the like. 4,280,707, Cl. 277-84.000.

Blount, David H. Process for the production of broken down lignin-cellulose silicate copolymers. 4,281,110, Cl. 536-84.000.

Bloxham, Steven R. System for monitoring and improving motor vehicle operating efficiency. 4,280,457, Cl. 123-198.00R.

Blum, Herbert, to Hoechst Aktiengesellschaft. Sheet feeding device. 4,280,691, Cl. 271-11.000.

Blumenthal, Gunter; and Bollmann, Alfred, to Bochumer Eisenhuette Heintzmann GmbH & Co. Arrangement for controlled engagement of the tools of a mining machine with a mine face. 4,280,734, Cl. 299-34.000.

Bochumer Eisenhuette Heintzmann GmbH & Co.: *See*—
Blumenthal, Gunter; and Bollmann, Alfred, 4,280,734, Cl. 299-34.000.

Bodin, Ove. Fork-lift truck having means for regulating the horizontal distance between the tines and for laterally displacing the tines. 4,280,781, Cl. 414-671.000.

Bodine, Albert G. Sonic apparatus for cleaning wells, pipe structures and the like. 4,280,557, Cl. 166-177.000.

Bodine, Albert G. Sonic technique and system for facilitating the extraction of mineral material. 4,280,558, Cl. 166-245.000.

Boehmke, Gunther: *See*—
Nonn, Konrad; Walz, Klaus; Wolf, Karlheinz; and Boehmke, Gunther, 4,280,960, Cl. 260-403.000.

Boeing Company, The: *See*—
Bhat, Waman V., 4,280,587, Cl. 181-213.000.

Bogese, Stephen B., II, to Virginia Patent Development Corp. Cable assembly having shielded conductor. 4,281,212, Cl. 174-36.000.

Boghosian, John W.: *See*—
Kienzle, Charles; Gebura, Stanley E.; and Boghosian, John W., 4,281,067, Cl. 521-56.000.

Bogoshian, Gregory V., to Xerox Corporation. Roll fuser loading system. 4,280,443, Cl. 118-60.000.

Boise Cascade Corporation: *See*—
Elias, Thomas C., 4,280,653, Cl. 229-43.000.

Boldridge, Austin G., Jr., to Conversational Systems, Inc. Barooptical verification apparatus. 4,281,313, Cl. 340-146.3SY.

Bollmann, Alfred: *See*—
Blumenthal, Gunter; and Bollmann, Alfred, 4,280,734, Cl. 299-34.000.

Bond, Gary L., to Eastman Kodak Company. Dyeing process and compositions. 4,280,814, Cl. 8-588.000.

Bond, John L.: *See*—
Johnson, Donald L.; Bond, John L.; Rogols, Saul; and Salter, John W., 4,280,718, Cl. 282-27.500.

Bond, Robert; and Williams, Arthur R., to Dunlop Limited. Pneumatic tires. 4,280,543, Cl. 152-209.00R.

Boning, Otto H.: *See*—
Khan, Asadulla R.; and Boning, Otto H., 4,280,332, Cl. 62-156.000.

Bonn, Jerrold L.; Mahoney, Paul F.; and Monsen, Peter, to Signatron, Inc. High speed digital communication receiver. 4,281,411, Cl. 375-14.000.

Bonnerot, Georges, to U.S. Philips Corporation. Digital signal processing arrangement for controlling the level of a frequency-division multiplex signal. 4,281,408, Cl. 370-70.000.

Bontempelli, Jean-Claude, to Rhone-Poulenc Industries. Process and apparatus for handling and/or storing gallium in the metallic state. 4,280,980, Cl. 422-40.000.

Borg-Warner Corporation: *See*—
LaBuda, Edward F.; and Wang, Ting M., 4,280,608, Cl. 192-113.00B.

Borom, Marcus P.; and Schultz, John, Jr., to General Electric Company. Magnesia insulated heating elements. 4,280,932, Cl. 252-521.000.

Boros, Stephan A. Safety warning device for ignition switch. 4,280,633, Cl. 220-241.000.

Bossert, Friedrich: *See*—
Franckowiak, Gerhard; Bossert, Friedrich; Heise, Arend; and Towart, Robertson, 4,280,998, Cl. 424-250.000.

Bourgeois, John J.: *See*—
Berkowitz, Irving L.; and Bourgeois, John J., 4,280,725, Cl. 292-223.000.

Boursier, Leon, to Keyes Fibre Company. Molded paper pulp container. 4,280,648, Cl. 229-2.5EC.

Bovier, Edward M.: *See*—
Hunt, Walter G.; Kovats, Leslie P.; and Bovier, Edward M., 4,281,111, Cl. 536-111.000.

Bowen, John G.: *See*—
Kovalenko, Eugene N.; and Bowen, John G., 4,280,293, Cl. 40-587.000.

Bowyer, William H.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,281,241, Cl. 235-400.000.

BP Chemicals Limited: *See*—
McCormick, Bryan H., 4,281,098, Cl. 528-139.000.

Bracco, Dario: *See*—
Sguazzi, Angelo, 4,280,499, Cl. 128-303.100.

Bradley, Irving: *See*—
Masenheimer, John H.; and Bradley, Irving, 4,281,370, Cl. 362-287.000.

Braestrup, Claus; and Squires, Richard F. Process for determining the concentration of benzodiazepines in a body fluid. 4,280,993, Cl. 424-1.000.

Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, to Deutsche Texaco Aktiengesellschaft. Method of conducting reactions in a trickle-type reactor. 4,281,206, Cl. 568-396.000.

Brandt, Klaus: *See*—
Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus, 4,281,048, Cl. 429-218.000.

Brauer, Melvin; and Kroplinski, Thaddeus F., to NL Industries, Inc. Electrical devices containing a grease compatible, mineral oil extended polyurethane. 4,281,210, Cl. 174-23.00C.

Brazeau, Paul E., Jr.: *See*—
Guillemin, Roger C. L.; Lavielle, Solange; Brazeau, Paul E., Jr.; Ling, Nicholas C.; and Benoit, Robert A., 4,280,953, Cl. 260-112.50S.

Breazeale, Almut F., to Du Pont de Nemours, E. I., and Company. Vulcanizable fluorinated copolymers. 4,281,092, Cl. 526-247.000.

Breen, Dale H., to International Harvester Company. Agricultural disk having non-directional fracture properties. 4,280,566, Cl. 172-604.000.

Brehse, Robert F., to General Electric Company. High-voltage capacitor. 4,281,360, Cl. 361-303.000.

Briggs, Donald E., to Surface Systems, Inc. Apparatus and method for detecting wet and icy conditions on the surface of a pathway. 4,281,286, Cl. 324-61.00R.

Briggs, William D.: *See*—
Wilson, Jeffrey V.; and Briggs, William D., 4,280,430, Cl. 114-51.000.

Bristol Tool & Gauge Company Limited: *See*—
Richards, Gordon, 4,280,377, Cl. 74-813.00R.

British Gas Corporation: *See*—
Banks, Reginald G. S.; and Williams, Alan, 4,280,820, Cl. 48-214.00A.

Broadhurst, Peter J.: *See*—
Howard, Peter B.; and Broadhurst, Peter J., 4,280,849, Cl. 106-300.000.

Brock, Jean. Cape protector. 4,280,227, Cl. 2-88.000.

Brogardh, Torgny; and Stensland, Leif, to ASEA Aktiebolag. Fiber optical measurement apparatus. 4,281,245, Cl. 250-227.000.

Brokmann, Manfred; Sanders, Kurt; Sanders, Dieter; and Westhoff, Hermann. Furniture such as chairs and couches. 4,280,548, Cl. 160-383.000.

Bromberg, Henry, to Tech Industries, Inc. Apparatus and method for lining caps. 4,280,864, Cl. 156-500.000.

Bromley, Robert L.: *See*—
Burzen, Don N.; Workman, David E.; Bromley, Robert L.; Elles, Daniel G.; and Wilkuski, James E., 4,280,247, Cl. 16-112.000.

Brooks, Alvin R., Jr.: *See*—
Bryan, James S.; Tell, Mayo B.; Brooks, Alvin R., Jr.; and Gaster, Ivan, 4,280,383, Cl. 83-140.000.

Brooks, Jeffrey B.: *See*—
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,334, Cl. 346-153.100.
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,335, Cl. 346-153.100.

Brouwer, Nicholaas L.: *See*—
Dameron, H. Clifford, Jr.; Brouwer, Nicholaas L.; and Martin, Guy E., 4,280,857, Cl. 148-156.000.

Brown, Eugene W., to B. F. Goodrich Company, The. Self righting, automatically inflatable life raft. 4,280,239, Cl. 9-11.00A.

Brown & Williamson Tobacco Corporation: *See*—
Scholten, David L., 4,280,903, Cl. 209-469.000.

Bruhn, Larry C., to LBF Properties, Inc. Trailer hitch. 4,280,713, Cl. 280-415.00A.

Brunswick Corporation: *See*—
Staerzl, Richard E., 4,280,465, Cl. 123-494.000.

Bruun & Sorensen AB: *See*—
Alexandersson, Sven, 4,280,417, Cl. 110-346.000.

Bryan, James S.; Tell, Mayo B.; Brooks, Alvin R., Jr.; and Gaster, Ivan, to Dayco Corporation. Textile cot remover. 4,280,383, Cl. 83-140.000.

Brzack, Jeffrey A. Glider. 4,280,673, Cl. 244-13.000.

Bubik, Alfred; Kurtz, Rudiger; and Kutzelmann, Hermann, to Escher Wyss GmbH. Pulp feed for a papermaking machine. 4,280,870, Cl. 162-336.000.

Buchholz, Bernard; Welsh, Charles B.; and Miller, Henry C., to Pennwalt Corporation. Preparation of mercapto-alcohols. 4,281,202, Cl. 568-62.000.

Buchy, Francois: *See*—
Charles, Eliane; Hildebrandt, Mieczyslaw; and Buchy, Francois, 4,280,846, Cl. 106-73.200.

Buck, Ronald G., to Litton Systems, Inc. Method of cooking thin meats in a microwave oven. 4,281,022, Cl. 426-233.000.

Buckley, David A.; Ciccarelli, Roger N.; and Belli, Frank G., to Xerox Corporation. Migration imaging system. 4,281,050, Cl. 430-41.000.

Budzich, Mieczyslaw; Fitz, Forest G., Jr.; and Lawrence, Andrew M., to Nassau Recycle Corporation. Method and apparatus for separating finely sized materials. 4,280,901, Cl. 209-154.000.

Buisson, Marc F. B.: *See*—
Arliguie, Jean-Claude M.; Buisson, Marc F. B.; and Caruel, Jacques E. J., 4,280,324, Cl. 60-261.000.

Bullard, Herbert L.; and Osborn, Robert A., to Goodyear Tire & Rubber Company, The. Age resistant resin compositions containing anilino aryl acrylamide polymer. 4,281,080, Cl. 525-205.000.

Bunker Ramo Corporation: *See*—
Hovey, Ralph J., 4,280,882, Cl. 204-15.000.

Bunn, Christopher B., to Dyform Engineering Limited. Concrete slab surface finishing apparatus. 4,280,800, Cl. 425-62.000.

Burch, William M., to Capital Territory Health Commission. Diagnostic compositions. 4,280,991, Cl. 424-1.000.

Burke, John F.: *See*—
Yannas, Ioannis V.; Gordon, Philip L.; Huang, Chor; Silver, Frederick H.; and Burke, John F., 4,280,954, Cl. 260-123.700.

Burnett, Bradley W.; Fiterman, Charles E.; and Fish, Leonard A., to Bank Computer Network Corporation. Noise responsive data input apparatus and method. 4,281,323, Cl. 340-712.000.

Burnett, Jerry L. Gearless quadrophasor. 4,280,367, Cl. 74-42.000.

Burnier, Pierre H.: *See*—
Virolleau, Alain F.; Kant, Michel; and Burnier, Pierre H., 4,281,263, Cl. 310-13.000.

Burns Bros.: *See*—
Martinelli, Rene J., 4,280,545, Cl. 152-222.000.

Burns, Gary J.: *See*—
Bauer, Henry C.; Burns, Gary J.; Buzzard, Clair A.; Gordon, Travis H.; Kahlbrock, Heinz; Ricca, Robert F.; and Zachok, Robert M., 4,281,315, Cl. 340-147.00R.

Burroughs Corporation: *See*—
Doucette, Richard L., 4,281,258, Cl. 307-455.000.

Burzen, Don N.; Workman, David E.; Bromley, Robert L.; Elles, Daniel G.; and Wilkuski, James E., to Samsonite Corporation. Luggage case handle assembly. 4,280,247, Cl. 16-112.000.

Bush, Richard W.; Jenkins, Russell J.; and Rie, John E., to W. R. Grace & Co. Screen printable, UV curable opaque legend ink composition. 4,280,888, Cl. 204-159.150.

Butler, John M.: *See*—
United States of America, National Aeronautics and Space Administration; St. Clair, Terry L.; and Butler, John M., 4,281,102, Cl. 528-229.000.

Buxbaum, Lothar: *See*—
Kainmuller, Thomas; Habermeier, Jurgen; and Buxbaum, Lothar, 4,281,103, Cl. 528-289.000.

Buzzard, Clair A.: *See*—
Bauer, Henry C.; Burns, Gary J.; Buzzard, Clair A.; Gordon, Travis H.; Kahlbrock, Heinz; Ricca, Robert F.; and Zachok, Robert M., 4,281,315, Cl. 340-147.00R.

Byatt, Dennis W. G., to Marconi Company Limited, The. Stereoscopic television system. 4,281,341, Cl. 358-92.000.

Byrnes, Francis R., to Center Compression Lock Company, Inc. Tamperproof cap assembly for hydrant. 4,280,525, Cl. 137-296.000.

C-I-L Inc.: *See*—
Allen, John R.; Desrochers, Louis-Georges; and Loyer, Alain, 4,280,407, Cl. 102-320.000.

C.I.S.E. Centro Informazioni Studi Esperienze S.p.A.: *See*—
Bastida, Ezio M., 4,281,285, Cl. 324-58.50B.

C. R. Bard, Inc.: *See*—
Harnsberger, Frederick D., 4,280,981, Cl. 422-46.000.

Caldarella, Riccardo; and Nobile, Riccardo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Sampling system for decoding biphase-coded data messages. 4,281,292, Cl. 329-50.000.

Calfo, Raymond M.; Mulach, Arthur; and Jones, Warren W., to Westinghouse Electric Corp. Dynamoelectric machine with flux screen. 4,281,266, Cl. 310-256.000.

Callahan, James L.: *See*—
Shaw, Wilfrid G.; Paparizos, Christos; and Callahan, James L., 4,280,929, Cl. 252-439.000.

Callen, Patrick J.: *See*—
Bilsky, Herbert W.; and Callen, Patrick J., 4,281,278, Cl. 320-13.000.

Candy, James C.; and Wooley, Bruce A., to Bell Telephone Laboratories, Incorporated. Digital-to-digital code converter. 4,281,318, Cl. 340-347.0DD.

Canon Kabushiki Kaisha: *See*—
Ito, Hiroshi; Endo, Ichiro; and Ohno, Shigeru, 4,281,052, Cl. 430-48.000.
Ogawa, Yukio; Suzuki, Ryoichi; Kinoshita, Takao; and Uchiyama, Takashi, 4,280,761, Cl. 354-29.000.
Yano, Yasuhiro; Haruta, Masahiro; and Ohta, Tokuya, 4,281,329, Cl. 346-1.100.

Canron Corp.: *See*—
Stewart, John K., 4,280,613, Cl. 198-406.000.

Capital Territory Health Commission: *See*—
Burch, William M., 4,280,991, Cl. 424-1.000.

Carbonato, Gianfranco; and Bianchi, Nereo, to Necchi S.p.A. Household type sewing machine having microprocessor control. 4,280,424, Cl. 112-158.00E.

Cardozo, Douglas W.: *See*—
Gilbert, Richard S.; and Cardozo, Douglas W., 4,280,513, Cl. 128-785.000.

Carlson, Douglas C.: *See*—
Richards, Harry F.; and Carlson, Douglas C., 4,280,916, Cl. 252-33.400.

Carlson, Emery J.: *See*—
Armor, John N., and Carlson, Emery J., 4,281,194, Cl. 564-267.000.
Carlson, Lee G., to American Petro Mart, Inc. High capacity folded moving bed ion exchange apparatus and method for treating phosphoric acid. 4,280,904, Cl. 210-676.000.
Carlson, Randolph S.: *See*—
Elving, Robert L.; and Carlson, Randolph S., 4,281,365, Cl. 362-20.000.
Carpenter, David V.: *See*—
Rackley, Ray A.; and Carpenter, David V., 4,280,329, Cl. 60-754.000.
Caruel, Jacques E. J.: *See*—
Arliguie, Jean-Claude M.; Buisson, Marc F. B.; and Caruel, Jacques E. J., 4,280,324, Cl. 60-261.000.
Cash, David A.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,281,241, Cl. 235-400.000.
Castagna, John F., to Sparkomatic Corporation. Grille covered speaker assembly construction for compact automobiles and the like. 4,281,224, Cl. 179-146.00R.
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., to International Business Machines Corporation. Variable pre-spin drying time control of photoresists thickness. 4,281,057, Cl. 430-270.000.
Ceglowski, Jerzy W., to Universal Framework Coupling (Proprietary) Limited. Joint and framework. 4,280,769, Cl. 403-218.000.
Center Compression Lock Company, Inc.: *See*—
Byrnes, Francis R., 4,280,525, Cl. 137-296.000.
Centro Ricerche Fiat S.p.A.: *See*—
Palazzetti, Mario; Ponti, Cesare; and Tenci, Pier L., 4,280,853, Cl. 136-246.000.
Cerdan, Jean-Pierre: *See*—
Marjollet, Jacques; Tondeur, Gerard; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,280,825, Cl. 55-203.000.
Ceskoslovenska akademie ved: *See*—
Coupek, Jiri; Filka, Karel; and Kocourek, Jan, 4,281,233, Cl. 260-112.00R.
Cessna Aircraft Company, The: *See*—
Alderson, Loren L., 4,280,403, Cl. 100-43.000.
Chabot, Donald G.: *See*—
Batting, Robert D.; Chabot, Donald G.; and Poland, Donald R., 4,280,626, Cl. 209-658.000.
Chaconas, Peter C.; and Schafebook, Richard A., to Black & Decker Inc. Apparatus for installation of a door lockset. 4,280,776, Cl. 408-72.00R.
Chamberlain, Terence R.; and Bantick, John R., to Fisons Limited. Pharmaceutical heterocyclic compounds and compositions. 4,281,008, Cl. 424-269.000.
Chambers, Doyle M.: *See*—
Steelman, Carrol D.; Chambers, Doyle M.; and Andis, Michael D., 4,280,999, Cl. 424-251.000.
Champion International Corporation: *See*—
Montealegre, James, 4,280,649, Cl. 229-11.000.
Montealegre, James; and Dutcher, Daniel P., 4,280,651, Cl. 229-20.000.
Chapman, Peter; and Redfern, Martin W., to Elliott Brothers (London) Limited. Circuit for driving deflection coil. 4,281,275, Cl. 315-399.000.
Chapman, Virginia J. Environmental manicure system. 4,280,519, Cl. 132-73.500.
Charles, Eliane; Hildebrandt, Mieczyslaw; and Buchy, Francois, to Thomson-CSF. Method of fabrication of dielectric material having volume-distributed insulating barriers for use at high voltages and a ceramic body fabricated by said method. 4,280,846, Cl. 106-73.200.
Chattem, Inc.: *See*—
Pratt, Charles E., 4,280,917, Cl. 252-37.700.
Chatterley, Samuel: *See*—
Grobbelaar, Jacobus H.; Colson, Richard N.; Levitt, Charlie M.; and Chatterley, Samuel, 4,280,625, Cl. 209-582.000.
Chattha, Mohinder S., to Ford Motor Company. Sulfonate ester catalysts in thermosetting compositions. 4,281,075, Cl. 525-110.000.
Chauhan, Satya P.; Feldmann, Herman F.; Stambaugh, Edgel P.; and Liu, Ke-Tien, to Battelle Development Corporation. Solid fuel preparation method. 4,280,817, Cl. 44-1.00R.
Chauvette, Pamela A.; and Chauvette, Robert R., to Eli Lilly and Company. Process for 3-chloro cephalosporin nucleus. 4,281,117, Cl. 544-016.000.
Chauvette, Robert R., to Eli Lilly and Company. 3-Halo cephalosporins. 4,281,116, Cl. 544-16.000.
Chauvette, Robert R.: *See*—
Chauvette, Pamela A.; and Chauvette, Robert R., 4,281,117, Cl. 544-016.000.
Chemische Fabrik Stockhausen & Cie: *See*—
Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, 4,281,186, Cl. 564-46.000.
Chemische Werke Huls AG: *See*—
Leithauser, Horst; Osterhoff, Heinz; and Trukenbrod, Karl, 4,281,036, Cl. 427-222.000.
Chevron Research Company: *See*—
Current, Steven P., 4,281,174, Cl. 560-204.000.
Childs, William H.; and Mahle, Christoph E., to Communications Satellite Corporation. Planar QPSK demodulator. 4,281,293, Cl. 329-105.000.
Chin-Chi, Liao. Disintegrable lump abrasive grains and process for producing same. 4,280,821, Cl. 51-298.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt: *See*—
Szekely, Istvan; and Lovasz nee Gaspar, Marianna, 4,281,170, Cl. 560-124.000.
Choung, Hun R., to DAP, Inc. Cleaning and priming composition containing titanium acetylacetonate and method. 4,281,037, Cl. 427-407.300.
Chow, Kirk K. Reversihble ratchet drive. 4,280,379, Cl. 81-62.000.
Christensen, Burton G.; Guthikonda, Ravindra N.; Johnston, David B. R.; and Schmitt, Susan M., to Merck & Co., Inc. 3-(2-Aminoethylthio)-6-amido-7-oxo-1-azabicyclo(3.2.0)-hept-2-ene-2-carboxylic acid. 4,281,002, Cl. 424-263.000.
Christensen, Carl O., to Roll-Rite Corp. Self-steering caster. 4,280,246, Cl. 16-35.00D.
Christensen, Erik C., to F. L. Smidth & Co. Apparatus for and method of demounting slide shoe. 4,280,267, Cl. 29-426.300.
Christensen, Richard G.: *See*—
White, Edward, V; Hertz, Harry S.; and Christensen, Richard G., 4,281,246, Cl. 250-282.000.
Chrysler Corporation: *See*—
Graham, Kenneth A., 4,280,463, Cl. 123-445.000.
Chuang, Chin-Sheng; and LaMarche, Robert E., to Bell Telephone Laboratories, Incorporated. Speech-nonspeech detector-classifier. 4,281,218, Cl. 179-1.0SC.
Ciba-Geigy Corporation: *See*—
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,280,946, Cl. 260-326.00N.
Kainmuller, Thomas; Habermeier, Jurgen; and Buxbaum, Lothar, 4,281,103, Cl. 528-289.000.
Ciccarelli, Roger N.: *See*—
Buckley, David A.; Ciccarelli, Roger N.; and Belli, Frank G., 4,281,050, Cl. 430-41.000.
Cieslak, Leo. Heat exchanger for exhaust outlet of a room heating unit. 4,280,555, Cl. 165-47.000.
Cincinnati Electronics Corporation: *See*—
Wissel, Frank A.; Smith, Donald E.; Martinet, Robert L.; Dapper, Mark J.; and Kiliman, Douglas A., 4,281,412, Cl. 375-86.000.
Citizen Watch Co., Ltd.: *See*—
Tanaka, Eiichiro, 4,281,406, Cl. 368-82.000.
Clark Control, Inc.: *See*—
Weeks, Robert W., 4,281,305, Cl. 335-132.000.
Clark Equipment Company: *See*—
Bartow, Richard J., 4,280,592, Cl. 187-9.00E.
Cruise, Phillip D., 4,280,609, Cl. 192-113.00B.
Clark, Randall N. Trailers for hauling logs and the like and adapted for use in tandem. 4,280,712, Cl. 280-144.000.
Clarke, Robert L.; and Daum, Sol J., to Sterling Drug Inc. Lower-alkyl 4,6,7,8,8a-9-hexahydro-6,9-ethanothieno[3,2-f]indolizine-10-carboxylate. 4,281,130, Cl. 546-63.000.
Cleland, Marshall R.: *See*—
Thompson, Chester C.; and Cleland, Marshall R., 4,281,251, Cl. 250-398.000.
Cleland, Robert K. Brew rail adapter. 4,280,401, Cl. 99-295.000.
Clemence, Francois: *See*—
Humbert, Daniel; Clemence, Francois; and Dagnaux, Michele, 4,281,012, Cl. 424-278.000.
Cochran, Clarence D., to Cochran, John. Masonry saw. 4,280,472, Cl. 125-13.00R.
Cochran, John: *See*—
Cochran, Clarence D., 4,280,472, Cl. 125-13.00R.
Colson, Richard N.: *See*—
Grobbelaar, Jacobus H.; Colson, Richard N.; Levitt, Charlie M.; and Chatterley, Samuel, 4,280,625, Cl. 209-582.000.
Comer, Robert C.; and Kruzel, Thomas F., to Toro Company, The. Reciprocating cutter. 4,280,276, Cl. 30-144.000.
Commissariat a l'Energie Atomique: *See*—
Corfa, Yves-Paul; Marchal, Paul; Roussel, Victor; and Vertut, Jean, 4,280,288, Cl. 37-54.000.
Ferrari, Luciano; Fourest, Bernard; Kayser, Gaston; and Martin, Robert, 4,280,872, Cl. 176-38.000.
Communications Satellite Corporation: *See*—
Childs, William H.; and Mahle, Christoph E., 4,281,293, Cl. 329-105.000.
Stegens, Ronald E., 4,281,302, Cl. 333-204.000.
Compagnie Internationale pour l'Informatique-Cil Honeywell Bull: *See*—
Lamare, Jean-Claude; and Maury, Christian, 4,281,291, Cl. 329-50.000.
Computek, Inc.: *See*—
Gitelman, Ephraim; Marston, Glendon P.; and Bird, Peter A., 4,281,393, Cl. 364-900.000.
Connery, James G.; DiNapoli, Louis D.; and Punis, Giancarlo, to Leeds & Northrup Company. Ultrasonic Doppler flowmeter with correction for vibratory signals at zero-flow conditions. 4,280,365, Cl. 73-861.250.
Consarc Corporation: *See*—
Roberts, Raymond J., 4,280,550, Cl. 164-252.000.
Consolidated Foods Corporation: *See*—
King, James F.; and Horton, Gilbert L., 4,280,350, Cl. 72-7.000.
Container Corporation of America: *See*—
Gardner, Jeffrey M.; Sensenbrenner, Ronald R.; and Nelson, Bennie C., Jr., 4,280,650, Cl. 229-15.000.
Nelson, Bennie C., Jr., 4,280,622, Cl. 206-592.000.
Conte, Raffaele. Apparatus for magnetic recording of casual events relating to movable means. 4,281,354, Cl. 360-5.000.
Continental Group, Inc., The: *See*—
Gordon, Gerald, 4,280,268, Cl. 29-446.000.

Continental Gummi-Werke Aktiengesellschaft: *See*—
Zintarra, Helmut; and Klupfel, Olaf, 4,280,617, Cl. 198-699.000.
Continental Instruments Corporation: *See*—
Mannion, Robert S., 4,281,242, Cl. 235-449.000.
Continental Plastics, Inc.: *See*—
Lewis, Duane H., 4,280,636, Cl. 220-307.000.
Control Concepts, Inc.: *See*—
Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,280,396, Cl. 91-320.000.
Conversational Systems, Inc.: *See*—
Boldridge, Austin G., Jr., 4,281,313, Cl. 340-146.3SY.
Conveyor Improvements (Doncaster) Limited: *See*—
Ward, Christopher J.; and Hughes, Septimus, 4,280,619, Cl. 198-823.000.
Conzelmann, Gerhard: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,280,260, Cl. 28-255.000.
Cook, Albert N.; and Kornatowski, Boleslaw, to Singer Company, The. Foot controller. 4,281,310, Cl. 338-108.000.
Coon, Michael D.; Grace, Martin K.; and Smith, Steven R., to Motorola Inc. Timing apparatus and method. 4,281,239, Cl. 235-92.0GA.
Cooper, George H., to Suntime, Inc. Heat exchanger-tank assembly for hot water heating system. 4,280,556, Cl. 165-76.000.
Cordova, Sam; and Cordova, Stella. Camping clean-up equipment center. 4,280,643, Cl. 294-141.000.
Cordova, Stella: *See*—
Cordova, Sam; and Cordova, Stella, 4,280,643, Cl. 294-141.000.
Corfa, Yves-Paul; Marchal, Paul; Roussel, Victor; and Vertut, Jean, to Commissariat a l'Energie Atomique. Modular dragging unit for collecting solid bodies on an underwater bed. 4,280,288, Cl. 37-54.000.
Corliss, John M.; and Stickford, George H., to United States of America, Energy. Passive environmental temperature control system. 4,280,333, Cl. 62-259.100.
Corning Glass Works: *See*—
Johnson, Ronald E., 4,280,939, Cl. 260-23.0AR.
Murphy, Edward F.; and Portzer, James R., 4,280,827, Cl. 65-11.00W.
Sheth, Kalapi D., 4,280,829, Cl. 65-158.000.
Corse, Louis G., to Machines Chambon. Rotary printing machine. 4,280,406, Cl. 101-177.000.
Cosgrove, Robert J., Jr.; and Smolen, Victor F. System for automatic feedback-controlled administration of drugs. 4,280,494, Cl. 128-213.00R.
Costello, Edward C.: *See*—
Simon, David J.; and Costello, Edward C., 4,281,316, Cl. 340-347.0SY.
Cottis, Robert A.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,281,241, Cl. 235-400.000.
Cotton Incorporated: *See*—
Warner, Lee A.; and Willcutt, Michael H., 4,280,779, Cl. 414-420.000.
Council, Edward L. Nose shield. 4,280,493, Cl. 128-207.180.
Coupek, Jiri; Filka, Karel; and Kocourek, Jan, to Ceskoslovenska akademie ved. Hydrophilic macroporous three dimensional copolymers of hydroxyalkyl acrylates or methacrylates with crosslinking agents and the method of their manufacturing. 4,281,233, Cl. 260-112.00R.
Covington, Wayne F.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.
Covrad Limited: *See*—
Cowell, Timothy A. T., 4,280,352, Cl. 72-186.000.
Cowell, Timothy A. T., to Covrad Limited. Apparatus for forming corrugated sheet material. 4,280,352, Cl. 72-186.000.
Cowpland, Michael C. J.; and Beirne, Patrick R., to Mitel Corporation. Telephone line circuit. 4,281,219, Cl. 179-18.0FA.
Cox, Johnny C.: *See*—
Babb, James H.; and Cox, Johnny C., 4,280,884, Cl. 204-109.000.
Cox, Raymond C.: *See*—
Balaban, Stephen M.; and Cox, Raymond C., 4,281,122, Cl. 544-190.000.
Coyte, Raymond G.: *See*—
Molins, Desmond W.; Hinchcliffe, Dennis; Heybourn, Frank; and Coyte, Raymond G., 4,280,611, Cl. 198-347.000.
CPC International Inc.: *See*—
Walon, Raoul, 4,281,028, Cl. 426-658.000.
Craig, Robert S., to Acme Resin Corporation. Catechol resins for the shell process. 4,281,090, Cl. 525-501.000.
Crandall, Thomas L.: *See*—
Kerr, Douglas M.; Crandall, Thomas L.; and Scalf, Daniel J., 4,280,413, Cl. 105-150.000.
Crawford, Paul R.: *See*—
Bean, Samuel L.; Swaine, James W., Jr.; and Crawford, Paul R., 4,280,553, Cl. 165-1.000.
Creusot-Loire: *See*—
Giraud, Jean; and Laigneau, Richard, 4,280,393, Cl. 89-36.00H.
Crichlow, Walter W., to Kobe, Inc. Centrifugal pitot pump with means for improving net positive suction head. 4,280,790, Cl. 415-89.000.
Croll, Ian M.: *See*—
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., 4,281,057, Cl. 430-270.000.
Crompton & Knowles Corporation: *See*—
Wheeler, Norton C., Jr.; Seuferling, John G.; and Pennila, Simo A. O., 4,280,801, Cl. 425-113.000.
Crosby, Edward L., Jr., to RCA Corporation. Balloon with deflation port. 4,280,674, Cl. 244-99.000.
Crow, Jr., Arthur F. Auxiliary shovels for agricultural implement. 4,280,563, Cl. 172-126.000.
Crown Cork & Seal Company, Inc.: *See*—
Potts, Vinson S., 4,280,427, Cl. 113-121.00C.
Croyle, Gene F., to PCE Corporation. Method and apparatus for electro-pneumatic control of a stitching machine. 4,280,425, Cl. 112-272.000.
Cruise, Phillip D., to Clark Equipment Company. Wet disc brake or clutch with curved stator disc tabs. 4,280,609, Cl. 192-113.00B.
CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
DiVita, Pietro, 4,280,751, Cl. 350-96.150.
Culver, William H., to Optelecom, Inc. Applications of dual function electro-optic transducer in optical signal transmission. 4,281,253, Cl. 250-551.000.
Cummins Engine Company, Inc.: *See*—
Gaal, Stephen L.; Gant, Gary L.; Muntean, George L.; Reiners, Neville H.; and Shea, Michael H., 4,280,659, Cl. 239-124.000.
Cuneo, Giuseppe: *See*—
Alessio, Lorenzo E.; and Cuneo, Giuseppe, 4,280,542, Cl. 144-230.000.
Cunning, Joseph M., to Bird & Son, Inc. Roof ridge ventilator. 4,280,399, Cl. 98-42.00A.
Current, Steven P., to Chevron Research Company. Oxidative carbonylation of alcohols to produce dialkyl oxalates. 4,281,174, Cl. 560-204.000.
Cutler, John H.; and Walker, Loren H., to General Electric Company. Dual mode AC motor drive system. 4,281,276, Cl. 318-803.000.
Cutter Laboratories, Inc.: *See*—
Warner, Willis L.; and Nelson, Edward J., 4,280,497, Cl. 128-272.000.
Czarnecki, Jan: *See*—
Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, 4,281,074, Cl. 525-40.000.
Dagnaux, Michele: *See*—
Humbert, Daniel; Clemence, Francois; and Dagnaux, Michele, 4,281,012, Cl. 424-278.000.
Dahmen, Kurt: *See*—
Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, 4,281,186, Cl. 564-46.000.
Daimler-Benz Aktiengesellschaft: *See*—
Grabner, Christian; Reinhard, Theodor; Krugener, Rolf; and Kurth, Hermann W., 4,280,349, Cl. 70-358.000.
Dale, John N.: *See*—
Hartel, Edward O.; and Dale, John N., 4,280,792, Cl. 415-117.000.
Dale Products, Inc.: *See*—
Simonton, Robert D., 4,280,865, Cl. 156-538.000.
Dali, Carmelo; and Rich, David R., to Novametrix Medical Systems, Inc. Fixation ring for transcutaneous gas sensor probe. 4,280,505, Cl. 128-635.000.
Daloisio, Pasquale C., to Pennsylvania Pacific Corporation. Integral double-wall container. 4,280,640, Cl. 222-561.000.
Dalton, John, to Keystone Lighting Corp. Spring latch. 4,280,724, Cl. 292-87.000.
Dameron, H. Clifford, Jr.; Brouwer, Nicholaas L.; and Martin, Guy E., to Aluminum Company of America. Continuous draw anneal system. 4,280,857, Cl. 148-156.000.
Dana Corporation: *See*—
Knierim, Larry, 4,280,683, Cl. 254-17.000.
Daneman, Alexis G.: *See*—
Polsky, Robert D.; and Daneman, Alexis G., 4,280,488, Cl. 128-80.00H.
Daniel, Edmond; Guesnon, Jean; and Laurencin, Andre, to Institut Francais du Petrole. Connector with rotatable locking ring, particularly for a riser used in offshore oil exploration and production. 4,280,719, Cl. 285-90.000.
Dannheim, Walter R.; and McNaboe, John A., to Monsanto Company. Process of embossing and perforating thermoplastic film. 4,280,978, Cl. 264-156.000.
Danzig, Ivan F., to General Electric Company. Zinc electrode made from a modified zinc oxide for use in rechargeable electrochemical cells. 4,281,047, Cl. 429-217.000.
DAP, Inc.: *See*—
Choung, Hun R., 4,281,037, Cl. 427-407.300.
Dapper, Mark J.: *See*—
Wissel, Frank A.; Smith, Donald E.; Martinet, Robert L.; Dapper, Mark J.; and Kiliman, Douglas A., 4,281,412, Cl. 375-86.000.
Darco Water Systems, Inc.: *See*—
Berry, W. James, III; and Berry, William J., 4,280,912, Cl. 210-662.000.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Crosslinkable bis-imidyl derivatives. 4,280,946, Cl. 260-326.00N.
Datta, Pabitra; and Friel, Ronald N., to RCA Corporation. Video discs and molding compositions therefor. 4,280,941, Cl. 260-23.0XA.
Daum, Sol J.: *See*—
Clarke, Robert L.; and Daum, Sol J., 4,281,130, Cl. 546-63.000.
Davenport, John M.: *See*—
Bechard, Conrad E.; Davenport, John M.; and Lynch, Denis A., Jr., 4,281,274, Cl. 315-49.000.

Davis, Charles, Jr., to Union Carbide Corporation. Dry cell with electrolyte dispersion channels through the cathode mix. 4,281,046, Cl. 429-72.000.
Davis, Lynn M.; and Theis, James V., Jr. Controllable kite. 4,280,675, Cl. 244-155.00A.
Day, Charles E.: *See*—
Schurr, Paul E.; and Day, Charles E., 4,281,013, Cl. 424-283.000.
Dayco Corporation: *See*—
Bryan, James S.; Tell, Mayo B.; Brooks, Alvin R., Jr.; and Gaster, Ivan, 4,280,383, Cl. 83-140.000.
Guptil, Richard A.; Gaster, Ivan; and Meadows, Roger D., 4,280,722, Cl. 285-244.000.
De La Moneda, Francisco H.: *See*—
Bertin, Claude L.; De La Moneda, Francisco H.; and Soderman, Donald A., 4,280,855, Cl. 148-1.500.
Dean, Homer B.; and Mahurin, Ballard T., to International Business Machines Corporation. Heat fuser roll and method of manufacture. 4,280,263, Cl. 29-132.000.
Dean, Norman L.: *See*—
Perettie, Donald J.; and Dean, Norman L., 4,281,135, Cl. 546-345.000.
Deere & Company: *See*—
Friend, Kenneth D.; Gadtke, David W.; and Ziegler, Duane H., 4,281,388, Cl. 364-565.000.
Deffeyes, Robert J., to Graham Magnetics, Inc. Polymodal magnetic recording media and compositions useful therein. 4,281,043, Cl. 428-457.000.
DeGoler, Warren H. Animal tattooing paste and method of making the same. 4,280,813, Cl. 8-404.000.
Degussa Aktiengesellschaft: *See*—
Koehler, Wolfgang, 4,281,041, Cl. 428-336.000.
de Jong, Hendrik J., to N.V. Nederlandsche Apparatenfabriek NEDAP. Fastener apparatus. 4,280,256, Cl. 24-155.0BR.
DelBello, Vincenzo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Condenser microphone. 4,281,221, Cl. 179-111.00R.
Delsing, Dale; and Fogelson, Mark, to Zenith Radio Corporation. Method and composition for electrically resistive material for television cathode ray tubes. 4,280,931, Cl. 252-518.000.
Demco, Inc.: *See*—
Babb, James H.; and Cox, Johnny C., 4,280,884, Cl. 204-109.000.
DeMesa, Nicanor P., III; and Laabs, John E., to Harris Corporation. Bus collision avoidance system for distributed network data processing communications system. 4,281,380, Cl. 364-200.000.
Deming, John M.: *See*—
Beestman, George B.; and Deming, John M., 4,280,833, Cl. 71-100.000.
de Montigny, Armand; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Preparation of multi-branched silicon-functional polyorgano-siloxanes. 4,281,144, Cl. 556-416.000.
Demoute, Jean-Pierre: *See*—
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,281,182, Cl. 562-506.000.
Denkowski, Walter J.; and Warsing, Daniel S., to Philadelphia Gear Corporation. Portable drive unit for valve actuator. 4,280,373, Cl. 74-625.000.
Dennison Manufacturing Company: *See*—
Shair, Irwin, 4,281,331, Cl. 346-75.000.
DePompei, Michael F.; and Hlynsky, Alex, to Diamond Shamrock Corporation. Quinoline catalyzed synthesis of pyridazinone pharmaceutical intermediates. 4,281,125, Cl. 544-239.000.
Deptolla, Udo: *See*—
Fabinski, Walter; and Deptolla, Udo, 4,281,248, Cl. 250-345.000.
Desrochers, Louis-Georges: *See*—
Allen, John R.; Desrochers, Louis-Georges; and Loyer, Alain, 4,280,407, Cl. 102-320.000.
Dessel, Thomas F. Quick-release fitting for a sailboat stay. 4,280,432, Cl. 114-109.000.
Deutsch, Adolf: *See*—
Koelichen, Harald; and Deutsch, Adolf, 4,280,277, Cl. 33-23.00D.
Deutsch, Daniel H. Microporous member with interconnected, oriented tapered voids. 4,280,909, Cl. 210-490.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Hentschel, Klaus; and Bittner, Friedrich, 4,281,123, Cl. 544-194.000.
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, 4,281,010, Cl. 424-275.000.
Knorre, Helmut; and Fischer, Joachim, 4,280,914, Cl. 210-743.000.
Deutsche Texaco Aktiengesellschaft: *See*—
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,281,206, Cl. 568-396.000.
Devico, Michael J.: *See*—
Hillman, Gary; and Devico, Michael J., 4,281,031, Cl. 427-45.100.
Dewhirst, Floyd E., to Forsyth Dental Infirmary for Children. Dental-cement composition and method of preparing and using same. 4,280,842, Cl. 106-35.000.
Dhabhar, Dadi J.; Heyd, Allen; and Schmidt, Nicholas F., to Richardson-Merrell Inc. Denture adhesive of sodium carboxymethylcellulose, poly(ethylene oxide) homopolymer and mineral oil. 4,280,936, Cl. 260-13.000.
Diamond International Corporation: *See*—
Struble, Glenn E., 4,280,810, Cl. 493-356.000.
Diamond Shamrock Corporation: *See*—
DePompei, Michael F.; and Hlynsky, Alex, 4,281,125, Cl. 544-239.000.
Dieck, Ronald L., to General Electric Company. Modified polyester compositions. 4,280,948, Cl. 260-40.00R.
Dieck, Ronald L., to General Electric Company. Modified polyester compositions containing mineral filler. 4,280,949, Cl. 260-40.00R.
Diehl GmbH & Co.: *See*—
Weber, Adolf; Rhau, Siegfried; and Ahlers, Utz-Udo, 4,280,408, Cl. 102-501.000.
Weidner, Peter, 4,280,410, Cl. 102-210.000.
Dietze, Klaus: *See*—
Agricola, Manfred; Dietze, Klaus; Mayr-Stein, Horst; Reimer, Karl-Heinz; Reinhold, Andreas; Schmid, Adolf; and Schosnig, Johannes-Georg, 4,281,410, Cl. 370-110.000.
DiNapoli, Louis D.: *See*—
Connery, James G.; DiNapoli, Louis D.; and Punis, Giancarlo, 4,280,365, Cl. 73-861.250.
di Rosa, Gaetano, to Fata European Group S.p.A. Apparatus for cutting and metering slabs or bales of unvulcanized rubber. 4,280,575, Cl. 177-123.000.
Disko, Harry: *See*—
Katzman, Allison W.; Disko, Harry; and Jaworski, Eugene, 4,280,297, Cl. 46-41.000.
Kulesza, Ralph J.; Disko, Harry; and Thibault, James G., 4,280,300, Cl. 46-204.000.
Divine, David L. Combination fence and solar heater for swimming pools. 4,280,477, Cl. 126-416.000.
DiVita, Pietro, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Two-way coupler for branched light-transmission network. 4,280,751, Cl. 350-96.150.
Dixie Electrical Manufacturing Company: *See*—
Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, 4,280,768, Cl. 403-3.000.
Dohogne, L. Ranney, to Emerson Electric Co. Method of induction annealing squirrel cage rotors. 4,281,234, Cl. 219-10.430.
Dolby, Ray M. Apparatus and method for the identification of specially encoded FM stereophonic broadcasts. 4,281,217, Cl. 179-1.0GN.
Donaldson, Darrell J.; and Harper, Robert J., Jr., to United States of America, Agriculture. Method of imparting smolder resistance to cotton-containing textiles. 4,280,812, Cl. 8-116.00P.
Donaldson, Erle C.; and Sutterfield, F. Dexter, to United States of America, Energy. Method of determining interwell oil field fluid saturation distribution. 4,281,289, Cl. 324-355.000.
Donnally, William; and Smith, Chester L., to United States of America, Army. Fuze data quantizing system. 4,280,355, Cl. 73-5.000.
Doucette, Richard L., to Burroughs Corporation. High speed, low component count, CML exclusive NOR gate. 4,281,258, Cl. 307-455.000.
Dow Chemical Company, The: *See*—
Dunbar, Joseph E.; and Begin, Louis E., 4,281,118, Cl. 544-85.000.
Malhotra, Sudarshan K.; and Ricks, Michael J., 4,281,133, Cl. 546-298.000.
McCarty, Leslie P., 4,281,020, Cl. 424-342.000.
Perettie, Donald J.; and Dean, Norman L., 4,281,135, Cl. 546-345.000.
Sanner, James W.; and Owen, Peter W., 4,281,137, Cl. 548-239.000.
Small, Hamish; and Solc, Jitka K., 4,280,923, Cl. 252-323.000.
Snoble, Karel A. J., 4,281,200, Cl. 564-487.000.
Dow Corning Corporation: *See*—
Homan, Gary R.; and Blevins, Jan M., 4,281,094, Cl. 528-30.000.
Drago, Russell S.: *See*—
Gaul, John H., Jr.; and Drago, Russell S., 4,281,086, Cl. 525-330.000.
Drainoni, Riccardo A.: *See*—
Parsons, George W., Jr.; and Drainoni, Riccardo A., 4,281,252, Cl. 250-497.000.
Drake, Charles A., to Leach Industries. Game racquet. 4,280,699, Cl. 273-73.00C.
Dreml, Johann, to Peterzimmer America, Inc. Assembly for supporting printing screen. 4,280,405, Cl. 101-127.100.
Dressen, Anton, to Siemens Aktiengesellschaft. Circuit arrangement for evaluating pulse generator signals of various amplitudes. 4,281,262, Cl. 307-350.000.
Dresser Industries, Inc.: *See*—
Fuller, Dennis D., 4,280,571, Cl. 175-337.000.
McPhee, William A.; and Speights, Junius L., 4,280,568, Cl. 175-4.000.
Duill, Helmut: *See*—
Ansen, Jakob; Duill, Helmut; and Fasbender, Heinz, 4,280,283, Cl. 34-10.000.
Dunbar, Joseph E.; and Begin, Louis E., to Dow Chemical Company, The. Aminoalkylsulfides, aminoalkylsulfoxides, and aminoalkylsulfones. 4,281,118, Cl. 544-85.000.
Dunham, Harry K.: *See*—
Dunham, Heyward O.; and Dunham, Harry K., 4,280,852, Cl. 134-8.000.
Dunham, Heyward O.; and Dunham, Harry K. Metal tube cleaning method. 4,280,852, Cl. 134-8.000.
Dunleavy, Raymond A.; and Gill, William A., to Union Carbide Corporation. Copolymers, compositions, and articles, and methods for making same. 4,280,979, Cl. 264-157.000.
Dunlop Limited: *See*—
Bond, Robert; and Williams, Arthur R., 4,280,543, Cl. 152-209.00R.
Dunwald, Willi; Lewalter, Jurgen; Merten, Rudolf; Rottmaier, Ludwig; Schulte, Bernhard; and Meyer, Karl-Heinrich, to Bayer Aktiengesellschaft. Coating compositions obtained by reacting amino carboxylic acids derivatives with polyisocyanates and compounds containing carboxylic groups to produce polymers containing hydantoin rings and amide groups. 4,281,095, Cl. 528-49.000.

Du Pont de Nemours, E. I., and Company: *See—*
Akers, Richard L., 4,280,667, Cl. 242-43.00R.
Anderson, Burton C.; and Frazer, August H., 4,281,106, Cl. 528-344.000.
Bellis, Harold E., 4,281,193, Cl. 564-215.000.
Bivens, Joseph R.; Lyerly, William M.; and Simmons, Walter J., 4,280,943, Cl. 260-29.20E.
Breazeale, Almut F., 4,281,092, Cl. 526-247.000.
Nelson, Thomas L., 4,280,261, Cl. 28-271.000.
Pamm, Georges, 4,281,042, Cl. 428-361.000.
Pazos, Jose F., 4,281,089, Cl. 525-456.000.
Strolle, Clifford H.; and Thornley, Glenn D., 4,281,078, Cl. 525-131.000.

Duprez, Wayne R.; and Wong, Backman, to Standard-Thomson Corporation. Automotive thermostatic valve. 4,280,655, Cl. 236-34.500.

Durda, Daniel J.; and Quigley, John T., to Aeration Industries. Method for treating water. 4,280,911, Cl. 210-629.000.

Durrant, Richard. Bulk loading facility having a drop way. 4,280,243, Cl. 14-71.100.

Dusza, John P.; and Albright, Jay D., to American Cyanamid Company. Substituted pyrazolo (1,5-a)pyrimidines and their use as anxiolytic agents. 4,281,000, Cl. 424-251.000.

Dutcher, Daniel P.: *See—*
Montealegre, James; and Dutcher, Daniel P., 4,280,651, Cl. 229-20.000.

Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T. Freeze protection apparatus for solar collectors. 4,280,478, Cl. 126-420.000.

Dyachkov, Vasily M.: *See—*
Shlykov, Gennady N.; Dyachkov, Vasily M.; Zhestkov, Vitaly I.; and Tikhonov, Valentin N., 4,280,252, Cl. 19-255.000.

Dyche, Leslie, to Tool Production and Design Company Limited, The. Feed mechanism. 4,280,786, Cl. 414-749.000.

Dyform Engineering Limited: *See—*
Bunn, Christopher B., 4,280,800, Cl. 425-62.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Lang, Egon; and Nachtigall, Wilhelm, 4,280,802, Cl. 425-208.000.

E.C.-Hospitalsinventor A/S: *See—*
Vonsbaek, Ebbe; Hansen, Claus C.; and Munthe, Lene, 4,280,716, Cl. 280-642.000.

E M I -Varian Limited: *See—*
Baker, John E., 4,281,273, Cl. 315-39.610.

Eacret, Dan P., to Roberts, David P., a part interest. Cloth snag repair tool. 4,280,641, Cl. 223-1.000.

Eastham, John F.; and Evans, Peter D., to KGEL Limited. Disc motor with A.C. and D.C. stator windings. 4,281,265, Cl. 310-254.000.

Eastman Kodak Company: *See—*
Bond, Gary L., 4,280,814, Cl. 8-588.000.
Hyatt, John A.; French, Stephen E.; and Maggiulli, Cataldo A., 4,281,143, Cl. 548-360.000.
Irick, Gether, Jr.; and Wang, Richard H. S., 4,281,129, Cl. 546-6.000.
Kiefer, John E., 4,280,925, Cl. 252-428.000.
Tang, Ching W., 4,281,053, Cl. 430-58.000.
Wilson, John C., 4,281,207, Cl. 568-433.000.

Eaton Corporation: *See—*
Goscenski, Edward J., Jr., 4,280,375, Cl. 74-711.000.
Whitcomb, Paul H., 4,280,539, Cl. 144-2.00Z.
Zukausky, Keith E.; and Berlin, Donald M., Jr., 4,280,682, Cl. 251-251.000.

Ebauches S.A.: *See—*
Besson, Rene; and Scherrer, Igor, 4,281,405, Cl. 368-66.000.

Ebersole, Ralph R.: *See—*
Peacey, John G.; Ebersole, Ralph R.; Kitzinger, Frank; and Viens, Jean-Claude, 4,281,290, Cl. 324-426.000.

Eck, Leonard F.; and Horgen, Lyle, to Kansas Jack, Inc. Radius plate structure. 4,280,280, Cl. 33-203.120.

Eckberg, Keith S., II, to Stout Industries, Inc. Universal sign. 4,280,294, Cl. 40-606.000.

Eckerdt, Lawrence W., to Albany International Corp. Suction dewatering system with cam actuated adjustable slot. 4,280,869, Cl. 162-252.000.

Edgerton, Philip. Rotary valve for a regenerative thermal reactor. 4,280,416, Cl. 110-254.000.

Egawa, Hideharu; Matsuki, Koji; and Suzuki, Yasoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for preparing complementary semiconductor device. 4,280,272, Cl. 29-571.000.

Eggers, Edward T., to Sperry Corporation. Tensioning apparatus. 4,280,320, Cl. 56-341.000.

Ehrrich, John E., to Ercon Corporation. Liquid filter and mass transfer means. 4,280,658, Cl. 239-6.000.

Eilerman, Robert G.: *See—*
Willis, Brian J.; and Eilerman, Robert G., 4,281,204, Cl. 568-361.000.

Eisemann, Kurt; and Montag, Jurgen, to U.S. Philips Corporation. Record player. 4,280,705, Cl. 369-233.000.

Eisenbeiss, Friedhelm: *See—*
Gunkel, Werner; and Eisenbeiss, Friedhelm, 4,280,905, Cl. 210-198.200.

Elahi, Nasik. Macroencapsulated immunosorbent assay technique and element therefor. 4,280,816, Cl. 23-230.00B.

Electricite de France: *See—*
Marjollet, Jacques; Tondeur, Gerard; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,280,825, Cl. 55-203.000.

Electro-Catheter Corporation: *See—*
Ackerman, Bernard, 4,280,503, Cl. 128-419.00P.

Eli Lilly and Company: *See—*
Chauvette, Pamela A.; and Chauvette, Robert R., 4,281,117, Cl. 544-016.000.
Chauvette, Robert R., 4,281,116, Cl. 544-16.000.
Merritt, Leander; and Pioch, Richard P., 4,281,141, Cl. 548-342.000.
Miesel, John L., 4,281,003, Cl. 424-263.000.

Elias, Thomas C., to Boise Cascade Corporation. Composite container including a peelable membrane closure member, and method. 4,280,653, Cl. 229-43.000.

Elles, Daniel G.: *See—*
Burzen, Don N.; Workman, David E.; Bromley, Robert L.; Elles, Daniel G.; and Wilkuski, James E., 4,280,247, Cl. 16-112.000.

Elliott Brothers (London) Limited: *See—*
Chapman, Peter; and Redfern, Martin W., 4,281,275, Cl. 315-399.000.

Ellis, Don A.: *See—*
Flader, Tom R.; and Ellis, Don A., 4,280,758, Cl. 351-55.000.

Ellis, Jeffrey R.; and Wagner, Herman B., to Tile Council of America Inc. Sag resistant mortar compositions. 4,280,848, Cl. 106-90.000.

Elmar Plastics, Inc.: *See—*
Schor, S. Allen, 4,280,670, Cl. 242-68.500.

Elving, Robert L.; and Carlson, Randolph S., to Elving, Robert L. Variable photoelectric cell. 4,281,365, Cl. 362-20.000.

Emerson Electric Co.: *See—*
Dohogne, L. Ranney, 4,281,234, Cl. 219-10.430.

Endo, Ichiro: *See—*
Ito, Hiroshi; Endo, Ichiro; and Ohno, Shigeru, 4,281,052, Cl. 430-48.000.

Endo, Toshinaga: *See—*
Ugaji, Masana; Suyama, Hideo; Sakurai, Sadaaki; Yamaoka, Shigenori; Endo, Toshinaga; and Kusuhara, Akinobu, 4,281,223, Cl. 179-115.00R.

Energistics, Inc.: *See—*
Rosen, George, 4,280,376, Cl. 74-788.000.

Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R.; Angell, Daniel K.; and Yu, Terry T., 4,281,058, Cl. 430-296.000.

Eng, Kjell; and Bengtsson, Anders G., to AB Aiser. Protective pad or garment for the human body or parts thereof. 4,280,342, Cl. 66-177.000.

Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, to Voest-Alpine Aktiengesellschaft. Tiltable converter arrangement. 4,280,688, Cl. 266-245.000.

Envirex, Inc.: *See—*
Applegate, Charles S.; and Erickson, Paul R., 4,280,913, Cl. 210-669.000.

Ercon Corporation: *See—*
Ehrrich, John E., 4,280,658, Cl. 239-6.000.

Erhard, Helmut, to Heidelberger Zement Aktiengesellschaft. Method of combining in-the-mill drying and firing of coal with enhanced heat recovery. 4,280,418, Cl. 110-347.000.

Erickson, John W.; and Petrie, Harold L., to Kobe, Inc. Erosion resistant jet pump and method of making same. 4,280,662, Cl. 239-591.000.

Erickson, Paul R.: *See—*
Applegate, Charles S.; and Erickson, Paul R., 4,280,913, Cl. 210-669.000.

Escher, Balint; Prince, Dominique; and Vasseux, Jean, to Societe Lignes Telegraphics et Telephoniques. Process for the manufacture of tantalum solid electrolyte capacitors. 4,280,270, Cl. 29-570.000.

Escher Wyss GmbH: *See—*
Bubik, Alfred; Kurtz, Rudiger; and Kutzelmann, Hermann, 4,280,870, Cl. 162-336.000.

Escott, Barnee M.; Reynolds, Jerald J.; and Ward, William C., to International Business Machines Corporation. Method for coating mold. 4,281,032, Cl. 427-135.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,280,380, Cl. 81-470.000.

Ethyl Corporation: *See—*
Hafele, Robert X., 4,280,630, Cl. 215-100.00A.
Hafele, Robert X., 4,280,805, Cl. 425-525.000.

Eurosil, GmbH: *See—*
Moegen, Gerhard; and Wotruba, Gottfried, 4,281,260, Cl. 307-573.000.

Evans, John H., to Stant Inc. Torque override threaded locking cap. 4,280,346, Cl. 70-165.000.

Evans, John H., to Stant Inc. Torque override threaded locking cap. 4,280,347, Cl. 70-165.000.

Evans, Kenneth S., to Lucas Industries Limited. Power supply circuits. 4,281,377, Cl. 363-63.000.

Evans, Peter D.: *See—*
Eastham, John F.; and Evans, Peter D., 4,281,265, Cl. 310-254.000.

Exxon Production Research Company: *See—*
Best, Donald A., 4,280,559, Cl. 166-303.000.

Exxon Research & Engineering Co.: *See—*
Bearden, Roby; and Stuntz, Gordon F., 4,280,896, Cl. 208-113.000.
Stuntz, Gordon F.; and Bearden, Roby, 4,280,895, Cl. 208-113.000.
Taylor, William F., 4,280,894, Cl. 208-15.000.

Eysn, Manfred: *See—*
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,280,688, Cl. 266-245.000.

F. L. Smidth & Co.: *See—*
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F.lli Marzoli & C. S.p.A.: *See*—
Marzoli, Angelo, 4,280,321, Cl. 57-81.000.

Fabinski, Walter; and Deptolla, Udo, to Hartmann & Braun Aktiengesellschaft. Nondispersive infrared gas analyzer. 4,281,248, Cl. 250-345.000.

Falchle, Jorg: *See*—
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,280,359, Cl. 73-123.000.

Falconer, Claude J. Utilization of solar energy. 4,280,328, Cl. 60-641.00A.

Farrar, James G.: *See*—
Narlow, Douglas A.; and Farrar, James G., 4,281,321, Cl. 340-572.000.

Fasbender, Heinz: *See*—
Ansen, Jakob; Duill, Helmut; and Fasbender, Heinz, 4,280,283, Cl. 34-10.000.

Fata European Group S.p.A.: *See*—
di Rosa, Gaetano, 4,280,575, Cl. 177-123.000.

Fawcett, Sherwood L.; and Anno, James N., to Battelle Development Corporation. Unidirectional energy converter. 4,280,325, Cl. 60-370.000.

Fearing, Ralph B.; Telschow, Jeffrey E.; and Weil, Edward D., to Stauffer Chemical Company. Filled unsaturated polyester resin compositions having lowered viscosities. 4,281,071, Cl. 525-2.000.

Featherstone, Garnet I. Crepe cooking machine. 4,280,402, Cl. 99-355.000.

Federal Signal Corporation: *See*—
Gosswiller, Earl W., 4,281,311, Cl. 340-81.00R.

Feicho, Lutz: *See*—
Wischniewski, Martin; Feicho, Lutz; Fischer, Gerhard; and Peschke, Guenter, 4,280,971, Cl. 264-15.000.

Feldmann, Herman F.: *See*—
Chauhan, Satya P.; Feldmann, Herman F.; Stambaugh, Edgel P.; and Liu, Ke-Tien, 4,280,817, Cl. 44-1.00R.

Fellmann, Robert P.; Kory, Daniel R.; and Staas, William H., to Rohm and Haas Company. Cocontinuous interpenetrating morphological network composition of polymer of methyl methacrylate and polymer of ethylene-vinyl acetate. 4,281,084, Cl. 525-309.000.

Ferguson, Fred E.; Hughes, Rory R.; and Fersch, Kenneth E., to O. M. Scott and Sons Company. Urea-formaldehyde granular fertilizer. 4,280,830, Cl. 71-25.000.

Fernando, Quintus: *See*—
Zeitlin, Harry; and Fernando, Quintus, 4,280,986, Cl. 423-41.000.

Fernlund, Ingemar, to SKF Industries, Inc. Double-row spherical roller bearing. 4,280,743, Cl. 308-217.000.

Ferrari, Luciano; Fourest, Bernard; Kayser, Gaston; and Martin, Robert, to Commissariat a l'Energie Atomique. Core catcher device. 4,280,872, Cl. 176-38.000.

Fersch, Kenneth E.: *See*—
Ferguson, Fred E.; Hughes, Rory R.; and Fersch, Kenneth E., 4,280,830, Cl. 71-25.000.

Field, George F.; and Zally, William J., to Hoffmann-La Roche Inc. Imidazolecarboxaldehydes. 4,281,142, Cl. 548-343.000.

Filer, Burt, to Filer, Sandra Lee. Tube extracting apparatus. 4,280,274, Cl. 29-726.000.

Filer, Sandra Lee: *See*—
Filer, Burt, 4,280,274, Cl. 29-726.000.

Filka, Karel: *See*—
Coupek, Jiri; Filka, Karel; and Kocourek, Jan, 4,281,233, Cl. 260-112.00R.

Firestone Tire & Rubber Company, The: *See*—
Lohr, Delmar F., Jr., 4,280,927, Cl. 252-431.00N.

Firmenich SA: *See*—
Schulte-Elte, Karl-Heinrich, 4,280,934, Cl. 252-522.00R.

Fischer, Artur; and Fischer, Klaus, to Fischer, Artur. Arrangement for anchoring a mounting element in a support structure and mounting an object on the same. 4,280,391, Cl. 411-15.000.

Fischer, Gerhard: *See*—
Wischniewski, Martin; Feicho, Lutz; Fischer, Gerhard; and Peschke, Guenter, 4,280,971, Cl. 264-15.000.

Fischer, Joachim: *See*—
Knorre, Helmut; and Fischer, Joachim, 4,280,914, Cl. 210-743.000.

Fischer, Klaus: *See*—
Fischer, Artur; and Fischer, Klaus, 4,280,391, Cl. 411-15.000.

Fischer, Raymond C., to International Harvester Company. Pneumatic system for conveying granular material. 4,280,419, Cl. 111-80.000.

Fischli, Albert E.; and Szente, Andre, to Hoffmann-La Roche Inc. N'[3-(halobenzoyl)-4-(glycylamino)phenyl]ureas. 4,281,188, Cl. 564-51.000.

Fish, Leonard A.: *See*—
Burnett, Bradley W.; Fiterman, Charles E.; and Fish, Leonard A., 4,281,323, Cl. 340-712.000.

Fisons Limited: *See*—
Chamberlain, Terence R.; and Bantick, John R., 4,281,008, Cl. 424-269.000.

Fitch, James F., Jr.: *See*—
Adams, Clyde O., III; and Fitch, James F., Jr., 4,280,665, Cl. 241-62.000.

Fiterman, Charles E.: *See*—
Burnett, Bradley W.; Fiterman, Charles E.; and Fish, Leonard A., 4,281,323, Cl. 340-712.000.

Fitz, Forest G., Jr.: *See*—
Budzich, Mieczyslaw; Fitz, Forest G., Jr.; and Lawrence, Andrew M., 4,280,901, Cl. 209-154.000.

Flader, Tom R.; and Ellis, Don A., to Flader, Tom R. Vertically adjustable bifocal eye glasses. 4,280,758, Cl. 351-55.000.

Fleissner, Hans, to Vepa AG. Apparatus for the continuous wet treatment of liquid-permeable textile material or the like. 4,280,343, Cl. 68-158.000.

Flook, Glen E., Jr.: *See*—
LeFever, Randall H.; Harvey, William J.; and Flook, Glen E., Jr., 4,281,364, Cl. 362-10.000.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Lai Chen, Sow-Mei, to American Cyanamid. 15-Deoxy-16-hydroxy-16-substituted prostanoic acids and congeners. 4,281,153, Cl. 560-118.000.

FMC Corporation: *See*—
Milberger, Lionel J.; and Tucker, Albert R., 4,280,531, Cl. 137-624.110.
Yaffe, Jerome, 4,281,014, Cl. 424-285.000.

Fobes, Norman H.: *See*—
Miller, Paul W.; and Fobes, Norman H., 4,280,671, Cl. 242-78.300.

Foderick, John W. Inflatable catheter means and method. 4,280,501, Cl. 128-349.00B.

Fodor, Joseph E. Forced-air heat exchange system. 4,280,481, Cl. 126-429.000.

Fogelson, Mark: *See*—
Delsing, Dale; and Fogelson, Mark, 4,280,931, Cl. 252-518.000.

Fondazione deNora: *See*—
Spaziante, Placido; Sioli, Giancarlo; and Giuffre, Luigi, 4,281,184, Cl. 562-603.000.

Ford, Geoffrey E., to TI Fords Limited. Bottle inspection apparatus. 4,280,624, Cl. 209-524.000.

Ford Motor Company: *See*—
Chattha, Mohinder S., 4,281,075, Cl. 525-110.000.
Moskowitz, David; and Terner, Leslie L., 4,280,973, Cl. 264-63.000.
Oblinger, Fred G., 4,281,197, Cl. 564-393.000.
Van Wicklin, Warren A., Jr., 4,280,372, Cl. 74-552.000.

Formica Corporation: *See*—
Green, Robert W., 4,280,942, Cl. 260-27.00R.

Forrest, Robert T., to General Electric Company. Multichannel radio telephone system. 4,281,413, Cl. 455-34.000.

Forsman, Lars O. Apparatus for indicating inside dimensions. 4,280,278, Cl. 33-178.00R.

Forsyth Dental Infirmary for Children: *See*—
Dewhirst, Floyd E., 4,280,842, Cl. 106-35.000.

Foseco International Limited: *See*—
Hawthorne, Peter F.; and Rollin, Peter J., 4,281,035, Cl. 427-199.000.

Fourest, Bernard: *See*—
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Fowler, Herman H.: *See*—
Pechnyo, Michael; and Fowler, Herman H., 4,280,522, Cl. 137-72.000.

Fox, Jeffrey R.; Margolies, Arthur; Moolenbeek, Rob; and Resnick, Martin L., to GTE Laboratories Incorporated. Monitoring and signalling system including apparatus for processing binary signals having multiple messages. 4,281,394, Cl. 364-900.000.

Frailey, George E. Telephone dialing and answering device. 4,281,220, Cl. 179-90.0AD.

Franckowiak, Gerhard; Bossert, Friedrich; Heise, Arend; and Towart, Robertson, to Bayer Aktiengesellschaft. 1,4-Dihydropyridazine-3-carboxylic acid derivatives, a process for their preparation and their use as antihypertensives. 4,280,998, Cl. 424-250.000.

Frank, Walter; Bendszus, Otto; Freier, Hans J; and Traenckner, Hans-Joachim, to Bayer Aktiengesellschaft. Aqueous polyester emulsions for the production of open-pore coatings. 4,281,068, Cl. 521-62.000.

Fraula, Louis F.; McMahon, William H.; and Heckman. Thomas B., to Hobart Corporation. Warewashing machine splashover return system. 4,280,520, Cl. 134-60.000.

Frazer, August H.: *See*—
Anderson, Burton C.; and Frazer, August H., 4,281,106, Cl. 528-344.000.

Frazier, Lawrence M.; and Johnson, William H., to General Dynamics, Pomona Division. Range corrector circuit for a bistatic passive radar display. 4,281,327, Cl. 343-12.00R.

Fredd, John V., to Otis Engineering Corporation. Valve. 4,280,561, Cl. 166-332.000.

Fredriksson, Lars O. A., to K A Bergs Smide AB. Grab hook. 4,280,728, Cl. 294-78.00R.

Freel, John: *See*—
Montagna, John C.; Galli, Robert D.; and Freel, John, 4,280,881, Cl. 203-51.000.

Freelander, Israel R.; and Freelander, Michael S. Toy ski. 4,280,715, Cl. 280-623.000.

Freelander, Michael S.: *See*—
Freelander, Israel R.; and Freelander, Michael S., 4,280,715, Cl. 280-623.000.

Freier, Hans J: *See*—
Frank, Walter; Bendszus, Otto; Freier, Hans J; and Traenckner, Hans-Joachim, 4,281,068, Cl. 521-62.000.

Freitag, Dieter: *See*—
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; Lehnert, Gunther; and Lindner, Christian, 4,281,101, Cl. 528-196.000.

French, Stephen E.: *See*—
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Frey, Hans-Helmut: *See*—
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Friedrich Wilh. Schwing GmbH: *See—*
Schwing, Friedrich W.; and von Eckardstein, Karl-Ernst, 4,280,771, Cl. 405-150.000.
Friel, Ronald N.: *See—*
Datta, Pabitra; and Friel, Ronald N., 4,280,941, Cl. 260-23.0XA.
Friend, Kenneth D.; Gadtke, David W.; and Ziegler, Duane H., to Deere & Company. Tachometer. 4,281,388, Cl. 364-565.000.
Friese, Karl-Hermann; Haecker, Wolf-Dieter; and Pfeiffer, Burkhard, to Robert Bosch GmbH. Electrochemical sensor for oxygen concentration determination in gases and method of making the same. 4,280,890, Cl. 204-195.00S.
Friesorger, David F.: *See—*
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Fritzsche Dodge & Olcott Inc.: *See—*
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Fryer, Rodney I.: *See—*
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Fuji Jukogyo Kabushiki Kaisha: *See—*
Yamaguchi, Hiroshi; Kaneko, Hiroaki; and Nagano, Toshihiro, 4,280,455, Cl. 123-196.00M.
Fuji Photo Film Co., Ltd.: *See—*
Usami, Toshimasa; Kobayashi, Tomoyuki; Tatsuta, Sumitaka; and Komine, Shigeo, 4,281,060, Cl. 430-618.000.
Fujii, Etsuo: *See—*
Ohmori, Taiji; Tsuchiya, Yoshikazu; Sato, Makoto; Miyakawa, Yoshitaka; and Fujii, Etsuo, 4,280,740, Cl. 303-92.000.
Fujishiro, Takeshi: *See—*
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Fujitsu Limited: *See—*
Gounji, Takashi; and Kasai, Yoshihiko, 4,281,298, Cl. 333-186.000.
Fukui, Shinya: *See—*
Nagata, Yoshiaki; and Fukui, Shinya, 4,280,950, Cl. 260-42.210.
Fuller, Dennis D., to Dresser Industries, Inc. Rock bit. 4,280,571, Cl. 175-337.000.
Funabashi, Katsunori: *See—*
Kouyama, Mikihiro; and Funabashi, Katsunori, 4,280,582, Cl. 180-219.000.
Furtner, Walter: *See—*
Kerscher, Albert; and Furtner, Walter, 4,280,398, Cl. 92-29.000.
Fushimi, Kiyoshi, to Hitachi, Ltd. Receiving channel number indication system for television receiver. 4,281,414, Cl. 455-158.000.
Fussi, Fernando, to Hepar Industries, Inc. Process for obtaining low molecular weight heparins endowed with elevated pharmacological properties, and product so obtained. 4,281,108, Cl. 536-21.000.
Gaal, Stephen L.; Gant, Gary L.; Muntean, George L.; Reiners, Neville H.; and Shea, Michael H., to Cummins Engine Company, Inc. Fuel injector. 4,280,659, Cl. 239-124.000.
Gabriel of Canada Limited: *See—*
Patriquin, William G., 4,280,601, Cl. 188-316.000.
Gadtke, David W.: *See—*
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GAF Corporation: *See—*
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Galli, Robert D.: *See—*
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Galperin, Alexandr L.: *See—*
Onikov, Eduard A.; Galperin, Alexandr L.; Serebryannikov, Albert S.; Zabotin, Alexandr A.; and Loschilin, Evgeny D., 4,280,537, Cl. 139-436.000.
Gambaro, Susan M. Tooth cleaning implement. 4,280,518, Cl. 132-93.000.
Ganoung, David P. Powertrain and apparatus using a continuously variable ratio transmission to improve fuel economy. 4,280,469, Cl. 123-568.000.
Gant, Gary L.: *See—*
Gaal, Stephen L.; Gant, Gary L.; Muntean, George L.; Reiners, Neville H.; and Shea, Michael H., 4,280,659, Cl. 239-124.000.
Garden, William D., to Imperial Chemical Industries Limited. Catalyst compositions and their use in the preparation of release coatings. 4,281,093, Cl. 528-15.000.
Gardner, Jeffrey M.; Sensenbrenner, Ronald R.; and Nelson, Bennie C., Jr., to Container Corporation of America. Partition structure. 4,280,650, Cl. 229-15.000.
Garrett Corporation, The: *See—*
Mackay, Robin, 4,280,327, Cl. 60-641.0AC.
Rackley, Ray A.; and Carpenter, David V., 4,280,329, Cl. 60-754.000.
Garvey, Michael J.; and Griffiths, Ian C., to Lever Brothers Company. Stabilized aluminosilicate slurries. 4,280,920, Cl. 252-173.000.
Gaster, Ivan: *See—*
Bryan, James S.; Tell, Mayo B.; Brooks, Alvin R., Jr.; and Gaster, Ivan, 4,280,383, Cl. 83-140.000.
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Heikes, George E., Jr.; and Henderson, Claude L., 4,280,709, Cl. 277-229.000.
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Gaul, John H., Jr.; and Drago, Russell S., to University of Illinois Foundation, The. Polymer bound multidentate complexes. 4,281,086, Cl. 525-330.000.
Gausman, James W.: *See—*
Willenbring, Armer J.; Osby, Warren J.; and Gausman, James W., 4,280,381, Cl. 83-86.000.
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Gebura. Stanley E.: *See—*
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Shores, Marvin W., 4,281,328, Cl. 343-763.000.
General Electric Company: *See—*
Ammann, Charles L., 4,280,975, Cl. 264-81.000.
Andrews, Charles L.; and Belden, Lorne H., Jr., 4,281,287, Cl. 324-95.000.
Archer, William R., 4,281,374, Cl. 363-41.000.
Ashby, Bruce A., 4,281,146, Cl. 556-456.000.
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Borom, Marcus P.; and Schultz, John, Jr., 4,280,932, Cl. 252-521.000.
Brehse, Robert F., 4,281,360, Cl. 361-303.000.
Cutler, John H.; and Walker, Loren H., 4,281,276, Cl. 318-803.000.
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Dieck, Ronald L., 4,280,949, Cl. 260-40.00R.
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Graff, William A., 4,280,843, Cl. 106-48.000.
Heft, Eldon B., 4,281,303, Cl. 335-16.000.
Johnson, Peter D., 4,281,267, Cl. 313-25.000.
Keim, Thomas A.; and Jones, Donald W., 4,281,264, Cl. 310-194.000.
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Kornrumpf, William P., 4,281,372, Cl. 363-20.000.
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Olander, Walter K., 4,280,963, Cl. 260-429.00C.
Schoendube, Charles W., 4,281,306, Cl. 336-5.000.
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Wojcik, Dennis J., 4,280,580, Cl. 180-169.000.
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Vincent, Vera M., 4,280,273, Cl. 29-577.00R.
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General Foods Limited: *See—*
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Lakey, Leroy E., 4,281,277, Cl. 320-6.000.
Shannon, Gilbert E.; and Friesorger, David F., 4,280,338, Cl. 64-2.00R.
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Walters, Leslie K., 4,280,466, Cl. 123-520.000.
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George, Joachim, to Bayer Aktiengesellschaft. Process for the preparation of Schiff's bases by the reaction of aromatic amines with ketones. 4,281,195, Cl. 564-271.000.
George, John B., to RCA Corporation. Power supply arrangement for a tuning system. 4,281,349, Cl. 358-191.100.
Gerber, B. Lynn. Remotely adjustable sighting device for tractors. 4,280,281, Cl. 33-264.000.
Germain, Robert A., to True Temper Corporation. Injection molded snow shovel. 4,280,727, Cl. 294-54.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Lobbe, Armin, 4,280,735, Cl. 299-81.000.
Rassmann, Christoph; Hauschopp, Alois; Schwolow, Gunter; and Huss, Horst, 4,280,733, Cl. 299-34.000.
Geyer, Hermann: *See—*
Ambros, Peter; and Geyer, Hermann, 4,281,038, Cl. 428-131.000.
Gibbons, Ian: *See—*
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Gibbs, Stephen, to Keystone International, Inc. Apparatus and process for die-casting. 4,280,549, Cl. 164-113.000.
Gilbert, Richard S.; and Cardozo, Douglas W. Tool and method for attaching electrode to body tissue. 4,280,513, Cl. 128-785.000.

Gilbride, Andrew J., to USM Corporation. Segmented lasting wiper. 4,280,242, Cl. 12-12.400.

Gill, William A.: *See—*
Dunleavy, Raymond A.; and Gill, William A., 4,280,979, Cl. 264-157.000.

Gilles, Richard C.: *See—*
Scheetz, Howard A.; and Gilles, Richard C., 4,281,070, Cl. 525-1.000.

Gilmore, Herbert O., to Goodyear Tire & Rubber Company, The. Tire having a folded fabric reinforcement member and a method of building same. 4,280,547, Cl. 152-354.00R.

Gilmore, John F.: *See—*
Young, Robert G.; and Gilmore, John F., 4,281,271, Cl. 313-493.000.

Gimelfarb, Natan M.; Lugovnev, Fedor T.; and Misjura, Nikolai E. Apparatus for cleansing cattle hides. 4,280,345, Cl. 69-32.000.

Giolito, Silvio L.: *See—*
Mirviss, Stanley B.; and Giolito, Silvio L., 4,280,945, Cl. 260-30.60R.

Giraud, Jean; and Laigneau, Richard, to Creusot-Loire. Light weight armored vehicle. 4,280,393, Cl. 89-36.00H.

Gitelman, Ephraim; Marston, Glendon P.; and Bird, Peter A., to Computek, Inc. Programmabie computer terminal system. 4,281,393, Cl. 364-900.000.

Giuffre, Luigi: *See—*
Spaziante, Placido; Sioli, Giancarlo; and Giuffre, Luigi, 4,281,184, Cl. 562-603.000.

Givaudan Corporation: *See—*
Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, 4,281,136, Cl. 548-206.000.

Gjesdal, J. Harvey. Rotary seed cleaner. 4,280,900, Cl. 209-34.000.

Glaum, Gerald V.: *See—*
Subramanian, Kohur N.; Glaum, Gerald V.; and Walli, Einar, 4,280,988, Cl. 423-140.000.

Gleinig, Harald: *See—*
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Glinecke, Hermann R., to Globe Fire Equipment Company. Distributor for fire protection sprinkler head. 4,280,562, Cl. 169-39.000.

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Globe Fire Equipment Company: *See—*
Glinecke, Hermann R., 4,280,562, Cl. 169-39.000.

Gnant, Erich. Connecting device for insulated duct work. 4,280,536, Cl. 138-149.000.

Gnilitsky, Boris S.: *See—*
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Mironenko, Vyacheslav G.; and Kamshitsky, Pavel V., 4,281,304, Cl. 335-72.000.

Goguet, Jean A., to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Universal joint, notably for automobile vehicle transmissions. 4,280,340, Cl. 64-21.000.

Goldstein, Raymond: *See—*
Goss, Willis C.; and Goldstein, Raymond, 4,280,766, Cl. 356-350.000.

Goncharko, Michael, to Singer Company, The. Display arrangement for giving a visible pattern corresponding to one or more stitch parameters in a sewing machine. 4,280,423, Cl. 112-158.00E.

Gonzalez Barrera, Roberto: *See—*
Longenecker, John G., 4,281,025, Cl. 426-496.000.

Gonzalez, Ricardo, to Worcester Controls Corp. Lockable end plug for valve housings. 4,280,526, Cl. 137-315.000.

Goodden, Dennis D. Harness for lifting heavy objects. 4,280,645, Cl. 224-259.000.

Goodwin, Wendell W. Sacrificial anodic protector kit for a propeller shaft. 4,280,794, Cl. 416-146.00R.

Goodyear Tire & Rubber Company, The: *See—*
Agarwal, Maya, 4,281,104, Cl. 528-302.000.
Bullard, Herbert L.; and Osborn, Robert A., 4,281,080, Cl. 525-205.000.
Gilmore, Herbert O., 4,280,547, Cl. 152-354.00R.
Hopper, Roger J.; Sturm, Budd H.; and Geiser, Joseph F., 4,280,967, Cl. 260-785.000.

Gorder, Paul R. Personnel carrier for weed control. 4,280,711, Cl. 280-32.500.

Gordon, Gerald, to Continental Group, Inc., The. Adhesive application of two-part container. 4,280,268, Cl. 29-446.000.

Gordon, Philip L.: *See—*
Yannas, Ioannis V.; Gordon, Philip L.; Huang, Chor; Silver, Frederick H.; and Burke, John F., 4,280,954, Cl. 260-123.700.

Gordon, Travis H.: *See—*
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Gorshe, Thomas M.: *See—*
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Goscenski, Edward J., Jr., to Eaton Corporation. Controlled differential. 4,280,375, Cl. 74-711.000.

Goss, John B.; and Morrow, William D. Anti-two block system. 4,280,628, Cl. 212-266.000.

Goss, Willis C.; and Goldstein, Raymond, to United States of America, National Aeronautics and Space Administration. Optical gyroscope system. 4,280,766, Cl. 356-350.000.

Gosswiller, Earl W., to Federal Signal Corporation. Method and apparatus for increasing effective light intensity of a rotating light. 4,281,311, Cl. 340-81.00R.

Goto, Kazuhiro: *See—*
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Gounji, Takashi; and Kasai, Yoshihiko, to Fujitsu Limited. Flexural transducer. 4,281,298, Cl. 333-186.000.

Grabner, Christian; Reinhard, Theodor; Krugener, Rolf; and Kurth, Hermann W., to Daimler-Benz Aktiengesellschaft. Rotary cylinder lock, especially for automotive vehicles. 4,280,349, Cl. 70-358.000.

Grace, Martin K.: *See—*
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Graden, Lester E. Water elevating wheel. 4,280,789, Cl. 415-6.000.

Gradient: *See—*
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Graff, William A., to General Electric Company. Frit glass composition. 4,280,843, Cl. 106-48.000.

Graham, Kenneth A., to Chrysler Corporation. Fuel spray bar for internal combustion engine. 4,280,463, Cl. 123-445.000.

Graham Magnetics, Inc.: *See—*
Deffeyes, Robert J., 4,281,043, Cl. 428-457.000.

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Granda, Edward J.: *See—*
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Grants, Valdis; Schultz, Ron; and McAdams, Timothy E., to Allen-Bradley Company. Memory circuit for programmable machines. 4,281,392, Cl. 364-900.000.

Gray, Thomas C. Baled hay handling apparatus. 4,280,777, Cl. 414-24.600.

Greber, Gerd: *See—*
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Green Cross Corporation, The: *See—*
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Green, Norman W., to Occidental Research Corporation. Coal pyrolysis process. 4,280,876, Cl. 201-9.000.

Green, Robert W., to Formica Corporation. Aqueous acrylic contact adhesive. 4,280,942, Cl. 260-27.00R.

Greenberg, Lawrence J.; and Hyman, Gregory E. Educational toy. 4,280,809, Cl. 434-343.000.

Greer Hydraulics, Incorporated: *See—*
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Griesen, Bertus; and Gundlach, Harry C. W., to Hazemeijer B.V. High tension vacuum switches. 4,281,231, Cl. 200-144.00B.

Griffin, Alphonso. Pre-engineered construction system utilizing prefabricated members. 4,280,307, Cl. 52-90.000.

Griffiths, Ian C.: *See—*
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Grisar, J. Martin; and Wiech, Norbert L., to Richardson-Merrell Inc. 2-(Diphenylalkylimino)piperidine-3-carboxanilides as inhibitors of gastrointestinal hypersecretion. 4,281,006, Cl. 424-267.000.

Grobbelaar, Jacobus H.; Colson, Richard N.; Levitt, Charlie M.; and Chatterley, Samuel. Shade determination. 4,280,625, Cl. 209-582.000.

Groom, Nelson J.; Anderson, Williard W.; and Phillips, William H., to United States of America, National Aeronautics and Space Administration. Rim inertial measuring system. 4,281,384, Cl. 364-453.000.

Grudzinskas, Charles V.: *See—*
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Gruffaz, Max; and Micaelli, Odile, to Rhone-Poulenc Industries. Preparation of ethyl carboxylates. 4,281,176, Cl. 560-247.000.

Grundfest, Michael A., to Thomas & Betts Corporation. Alignment tool. 4,280,279, Cl. 33-180.00R.

Grychtol, Klaus, to BASF Aktiengesellschaft. Basic dyes. 4,280,964, Cl. 260-465.00D.

GTE Laboratories Incorporated: *See—*
Fox, Jeffrey R.; Margolies, Arthur; Moolenbeek, Rob; and Resnick, Martin L., 4,281,394, Cl. 364-900.000.
Smith, J. Thomas; Quackenbush, Carr L. W.; and Reid, F. Joseph, 4,280,850, Cl. 106-73.200.

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Mecone, David W.; Hartman, Donald W.; and Armstrong, Donald E., 4,281,363, Cl. 362-6.000.

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Guillemin, Roger C. L.; Lavielle, Solange; Brazeau, Paul E., Jr.; Ling, Nicholas C.; and Benoit, Robert A., to Salk Institute for Biological Studies, The. Glycosylated analogs of somatostatin. 4,280,953, Cl. 260-112.50S.

Gujer, Peter: *See*—
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Gulbransen, Jerry. Pocket for an athletic shoe. 4,280,287, Cl. 36-136.000.

Guldenfels, Dieter: *See*—
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Gulf Oil Corporation: *See*—
Back, Gayle E., 4,281,007, Cl. 424-269.000.
Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,281,152, Cl. 560-52.000.
Patel, Natu R., 4,280,831, Cl. 71-92.000.

Gulf Research & Development Company: *See*—
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Montagna, John C.; Galli, Robert D.; and Freel, John, 4,280,881, Cl. 203-51.000.
Schulz, Johann G.; Stanulonis, John J.; and Wajert, William R., 4,280,818, Cl. 44-56.000.
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Gundlach, Harry C. W.: *See*—
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Gunkel, Werner; and Eisenbeiss, Friedhelm, to Merck Patent Gesellschaft mit beschrankter Haftung. Chromatography column. 4,280,905, Cl. 210-198.200.

Guptil, Richard A.; Gaster, Ivan; and Meadows, Roger D., to Dayco Corporation. Hose clamp. 4,280,722, Cl. 285-244.000.

Gurley, James R. Work machine. 4,280,798, Cl. 418-54.000.

Gurwicz, David, to NADA Electronics Limited. Chopper-controlled alternator for battery charging. 4,281,279, Cl. 320-45.000.

Gustavsson, Lennart: *See*—
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Guthrie, Elmer F.; and Lundberg, Lennart A., to A. H. Lundberg Associates, Inc. Closed conditioning system for peeler logs. 4,280,284, Cl. 34-60.000.

Haag, James W., to Texaco Inc. Peak reading bottom hole pressure instrument. 4,280,362, Cl. 73-709.000.

Haas, Robert N., to Singer Company, The. Simulator complex data transmission system having self-testing capabilities. 4,280,295, Cl. 434-30.000.

Haberle, Wilhelm. Separating device. 4,280,907, Cl. 210-408.000.

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Hacheney, Wilfried. Process and apparatus for producing highly colloidized water-cement mixtures and for coating pipes. 4,280,847, Cl. 106-89.000.

Haddock, Cecil F. Underwater appendages for vessels. 4,280,433, Cl. 114-140.000.

Haecker, Wolf-Dieter: *See*—
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Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus. Battery cathode and method of making same. 4,281,048, Cl. 429-218.000.

Hafele, Robert X., to Ethyl Corporation. Container with handle. 4,280,630, Cl. 215-100.00A.

Hafele, Robert X., to Ethyl Corporation. Injection blow molding apparatus. 4,280,805, Cl. 425-525.000.

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Hahn, Gunter, to Interatom, International Atomreaktorbau GmbH. Nuclear power installation with loop arrangement. 4,280,873, Cl. 176-65.000.

Hales, Eric C., to Automotive Products Limited. Pressure modulating valves. 4,280,739, Cl. 303-6.00C.

Hall, Charles M.; and Wright, John B., to Upjohn Company, The. Phenylene dioxamate esters. 4,281,151, Cl. 560-44.000.

Hall, Richard J.: *See*—
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Hamajima, Shigemitsu: *See*—
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Hamden Industries, Inc.: *See*—
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Hamisch, Paul H., Jr; Karn, Donald L.; and Makley, James A., to Monarch Marking Systems, Inc. Label printing and applying apparatus. 4,280,863, Cl. 156-387.000.

Hammann, Ingeborg: *See*—
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Hanai, Kiyoshi; and Kondo, Takeo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Suspension arm mounting. 4,280,717, Cl. 280-663.000.

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Hara, Kunio, to Nifco Inc. Thermal cut-off fuse. 4,281,307, Cl. 337-114.000.

Hardtmann, Goetz E., to Sandoz, Inc. 4-Hydroxy-2-quinolinone-3-carboxylic acids and salts thereof. 4,281,131, Cl. 546-90.000.

Harmon, Robert W. Tool for making and breaking load currents. 4,281,228, Cl. 200-51.00R.

Harnsberger, Frederick D., to C. R. Bard, Inc. Blood oxygenator. 4,280,981, Cl. 422-46.000.

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Harris Corporation: *See*—
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Harris, Edward, to Koppers Company, Inc. Center link disc valve. 4,280,681, Cl. 251-229.000.

Harris, Nicholas, to Morton-Norwich Products, Inc. Process for preparing N-[2-(p-hydroxyphenyl)-ethyl]-p-chlorobenzamide. 4,281,190, Cl. 564-185.000.

Harris, Thomas G., to Armstrong World Industries, Inc. Phenolic foam. 4,281,069, Cl. 521-123.000.

Harris, Verdell; and Miller, Richard L., to Harris, Verdell. Vehicle heating and cooling system. 4,280,330, Cl. 62-3.000.

Hartel, Edward O.; and Dale, John N., to Avco Corporation. Air-cooled turbine rotor shroud with restraints. 4,280,792, Cl. 415-117.000.

Hartle, Robert J.; and Singerman, Gary M., to Gulf Research & Development Company. Diesel fuel compositions containing certain azides for improved cetane number. 4,280,819, Cl. 44-64.000.

Hartman, Donald W.: *See*—
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Hartmann & Braun Aktiengesellschaft: *See*—
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Hartmann, Ludwig A., to ICI Americas Inc. Preparation of cyano substituted benzyl esters. 4,280,965, Cl. 260-465.00D.

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Harvey, William J.: *See*—
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Hasegawa, Yoichi: *See*—
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Haslehner, Hermann: *See*—
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,280,688, Cl. 266-245.000.

Haspert, John C., to United States Pipe and Foundry Company, a part interest. Method and apparatus for mining. 4,280,732, Cl. 299-11.000.

Hauberg, Georg H. H.; Krag, Jens; and Pisecky, Jan, to Aktieselskabet Niro Atomizer. Method for spray drying liquid products. 4,281,024, Cl. 426-471.000.

Hauni-Werke Korber & Co. KG: *See*—
Reuland, Joachim, 4,280,516, Cl. 131-84.00C.

Hauschopp, Alois: *See*—
Rassmann, Christoph; Hauschopp, Alois; Schwolow, Gunter; and Huss, Horst, 4,280,733, Cl. 299-34.000.

Haussener, Ernst: *See*—
Schneider, Fred; and Sirtl, Wolfgang, 4,280,961, Cl. 260-412.800.

Havlik, Jaroslav J. Process and apparatus for the separation of hydrocarbons from petroleum bearing materials. 4,280,892, Cl. 208-8.00R.

Hawthorne, Peter F.; and Rollin, Peter J., to Foseco International Limited. Marking composition and method of using same. 4,281,035, Cl. 427-199.000.

Hayama, Takatsura, to Kabushikigaisha Nippon Kogu Seisakusho. Ball end mill. 4,280,774, Cl. 407-36.000.

Hayward, John A. D. Lost motion linkage assembly for a front loader. 4,280,783, Cl. 414-686.000.

Hazelbaker, Dale P. Insulation packaging machine. 4,280,538, Cl. 141-73.000.

Hazemeijer B.V.: *See*—
Griesen, Bertus; and Gundlach, Harry C. W., 4,281,231, Cl. 200-144.00B.

Health and Safety Executive: *See*—
Moodie, Keith, 4,280,326, Cl. 60-547.00R.

Heath, John S., to International Business Machines Corporation. Printing apparatus. 4,280,767, Cl. 400-216.200.

Hebenstreit, Ernst: *See*—
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,281,296, Cl. 333-165.000.

Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,281,297, Cl. 333-165.000.
Hebert, David L.: *See*—
Siniscal, Paul D.; Hebert, David L.; and Benzing, J. Paige, 4,280,615, Cl. 198-470.000.
Heckman, Thomas B.: *See*—
Fraula, Louis F.; McMahon, William H.; and Heckman, Thomas B., 4,280,520, Cl. 134-60.000.
Heft, Eldon B., to General Electric Company. Individual circuit breaker pole trip mechanism. 4,281,303, Cl. 335-16.000.
Heidelberger Zement Aktiengesellschaft: *See*—
Erhard, Helmut, 4,280,418, Cl. 110-347.000.
Heidrich, Jochen: *See*—
Rutzen, Horst; Heidrich, Jochen; Bischoff, Martin; Kloubert, Udo; Waltenberger, Peter; and Wegener, Ingo, 4,281,196, Cl. 564-292.000.
Heikes, George E., Jr.; and Henderson, Claude L., to Gates Rubber Company, The. Piston rubber. 4,280,709, Cl. 277-229.000.
Heilweil, Emanuel: *See*—
Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, 4,281,136, Cl. 548-206.000.
Heise, Arend: *See*—
Franckowiak, Gerhard; Bossert, Friedrich; Heise, Arend; and Towart, Robertson, 4,280,998, Cl. 424-250.000.
Hellgren, Hans; and Marklund, Erland, to Renholmens Mekaniska Verkstad AB. Saw arrangement having plural operator stations. 4,280,382, Cl. 83-106.000.
Helms, Horace H.: *See*—
Rozner, Alexander G.; and Helms, Horace H., 4,280,409, Cl. 102-364.000.
Hemmer, Valentine J., to Bendix Corporation, The. Socket and pin contacts for coaxial cable. 4,280,749, Cl. 339-177.00R.
Hempel, Rodney A., to American Standard Inc. Fireplace having outside air supply. 4,280,473, Cl. 126-120.000.
Henderson, Claude L.: *See*—
Heikes, George E., Jr.; and Henderson, Claude L., 4,280,709, Cl. 277-229.000.
Henderson, Henning M., to Kiloking (Proprietary) Limited. Monitoring the operation of an internal combustion engine. 4,280,358, Cl. 73-115.000.
Henkel Corporation: *See*—
Johnson, Donald L.; Bond, John L.; Rogols, Saul; and Salter, John W., 4,280,718, Cl. 282-27.500.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Rutzen, Horst; Heidrich, Jochen; Bischoff, Martin; Kloubert, Udo; Waltenberger, Peter; and Wegener, Ingo, 4,281,196, Cl. 564-292.000.
Henryson, Leif A. S., to AB Bergu Jarn- & Rorkonstruktioner. Method for handling palleted loads comprising bulk material contained in bags. 4,280,787, Cl. 414-786.000.
Hentschel, Klaus; and Bittner, Friedrich, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for introducing three substituents in cyanuric chloride. 4,281,123, Cl. 544-194.000.
Hepar Industries, Inc.: *See*—
Fussi, Fernando, 4,281,108, Cl. 536-21.000.
Hercules Incorporated: *See*—
Maslanka, William W.; and Spence, Gavin G., 4,281,082, Cl. 525-296.000.
Herion, Dieter: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,280,260, Cl. 28-255.000.
Herman, Luther R. Self-uncapping honeycomb and extractor means for use therewith. 4,280,236, Cl. 6-2.00R.
Hermans, Johny C., to s.a. Texaco Belgium n.v. Bispiperazido phosphorus compounds. 4,281,128, Cl. 544-337.000.
Herrling, Siegfried. 7H-1,3,4-Thiadiazolo-[3,2-a]-pyrimidin-7-one-5-carboxylic compounds. 4,281,120, Cl. 544-117.000.
Herron, Don: *See*—
Pitts, William M.; and Herron, Don, 4,280,731, Cl. 297-487.000.
Hertz, Harry S.: *See*—
White, Edward, V; Hertz, Harry S.; and Christensen, Richard G., 4,281,246, Cl. 250-282.000.
Herubel, Jean-Frederic, to N. Schlumberger & Cie. Compressed-air pistol of the humane killer type. 4,280,248, Cl. 17-1.00B.
Herzog, Donald E.; and Thomas, Larry, to St. Louis Conveyor Company, Inc. Material handling system and method. 4,280,301, Cl. 51-5.00R.
Hess, Jurgen: *See*—
Struve, Hans-Dirk; Hess, Jurgen; and Vysiotis, Theodor, 4,280,799, Cl. 418-97.000.
Heuschen, Jean; Jerome, Robert; and Teyssie, Philippe, to Teyssie, Philippe. Lactone copolymers, process for their preparation and compositions containing them. 4,281,087, Cl. 525-361.000.
Hewlett-Packard Company: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.
Rosenberg, Neil A., 4,280,507, Cl. 128-696.000.
Hexa Chemical: *See*—
Nagata, Yoshiaki; and Fukui, Shinya, 4,280,950, Cl. 260-42.210.
Heybourn, Frank: *See*—
Molins, Desmond W.; Hinchcliffe, Dennis; Heybourn, Frank; and Coyte, Raymond G., 4,280,611, Cl. 198-347.000.
Heyd, Allen: *See*—
Dhabhar, Dadi J.; Heyd, Allen; and Schmidt, Nicholas F., 4,280,936, Cl. 260-13.000.
Hibi, Katuhiko: *See*—
Kobayashi, Kenji; Hibi, Katuhiko; Kobayashi, Hisabumi; and Kato, Shoichi, 4,280,834, Cl. 71-103.000.
Hiester, Kenneth R., to Shop-Vac Corporation. Sound dome for electric vacuum cleaner. 4,280,245, Cl. 15-326.000.
Higuchi, Yasushi: *See*—
Nakayama, Yoshiki; Higuchi, Yasushi; and Yazawa, Chihiro, 4,280,958, Cl. 260-326.11R.
Hildebrandt, Mieczyslaw: *See*—
Charles, Eliane; Hildebrandt, Mieczyslaw; and Buchy, Francois, 4,280,846, Cl. 106-73.200.
Hilka International Co., Ltd.: *See*—
Uchiyama, Mutsuo, 4,280,750, Cl. 350-76.000.
Hill, James, Collator. 4,280,690, Cl. 270-58.000.
Hill, Robert S.: *See*—
Klaiber, George S.; Grajek, Stanley A.; and Hill, Robert S., 4,280,389, Cl. 84-212.000.
Hille Engineering Company Limited: *See*—
Wilson, Alexander I., 4,280,351, Cl. 72-21.000.
Hillman, Gary; and Devico, Michael J., to Machine Technology, Inc. Method and apparatus for processing workpieces. 4,281,031, Cl. 427-45.100.
Hills, Isaac A., to Animal Toys Plus, Inc. Torso-and display-supportable puppet. 4,280,292, Cl. 40-538.000.
Hinchcliffe, Dennis: *See*—
Molins, Desmond W.; Hinchcliffe, Dennis; Heybourn, Frank; and Coyte, Raymond G., 4,280,611, Cl. 198-347.000.
Hipps, Larry W. Pressure controlled electro-hydraulic brake system. 4,280,737, Cl. 303-3.000.
Hirai, Akira; Tanaka, Yukihisa; and Ohashi, Shigeo, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Small illuminating switch. 4,281,232, Cl. 200-315.000.
Hirakata, Kazuo: *See*—
Tomita, Tohru; Saitoh, Shinya; and Hirakata, Kazuo, 4,280,266, Cl. 29-241.000.
Hirzy, J. William, to Monsanto Company. Plastifiers, method of preparation and PVC compositions containing same. 4,281,077, Cl. 525-129.000.
Hitachi, Ltd.: *See*—
Fushimi, Kiyoshi, 4,281,414, Cl. 455-158.000.
Kawai, Toshio; Yamashita, Junichi; and Takamatsu, Jun, 4,280,874, Cl. 176-78.000.
Kuroiwa, Hiroshi; and Oyama, Yoshishige, 4,280,462, Cl. 123-437.000.
Sawa, Toshio; Kubota, Masayoshi; Takahashi, Sankichi; and Kaneko, Toyohiko, 4,280,886, Cl. 204-149.000.
Suzuki, Ryo; Asano, Atsushi; Takeshita, Masatoshi; and Takeuchi, Teruaki, 4,281,395, Cl. 365-15.000.
Takahashi, Kenji; Nagahara, Shusaku; Sato, Kazuhiro; Umemoto, Masuo; Akiyama, Toshiyuki; and Izumita, Morishi, 4,281,338, Cl. 358-44.000.
Ueda, Hirotada; Yasue, Toshikazu; and Uno, Takeshi, 4,281,342, Cl. 358-93.000.
Hlynsky, Alex: *See*—
DePompei, Michael F.; and Hlynsky, Alex, 4,281,125, Cl. 544-239.000.
Hobart Corporation: *See*—
Fraula, Louis F.; McMahon, William H.; and Heckman, Thomas B., 4,280,520, Cl. 134-60.000.
Hodgson, Robert A., to Maloney-Crawford Corporation. Glycol regeneration. 4,280,867, Cl. 159-47.00R.
Hodogaya Chemicals Co., Ltd.: *See*—
Kurosu, Yasuhisa; Kawada, Hiroshi; Kanasugi, Haruki; and Kashima, Akiko, 4,281,016, Cl. 424-300.000.
Hoechst Aktiengesellschaft: *See*—
Blum, Herbert, 4,280,691, Cl. 271-11.000.
Klug, Helmut; and Frey, Hans-Helmut, 4,280,940, Cl. 260-23.0XA.
Moraw, Roland, 4,281,049, Cl. 430-9.000.
Papenfuhs, Theodor; and Gengnagel, Kurt, 4,281,187, Cl. 564-50.000.
Hoeving, Philip; and Litovich, Michael. Jig-o-matic. 4,280,295, Cl. 43-19.200.
Hoffman, Andrew E. Compact projection television system. 4,281,352, Cl. 358-237.000.
Hoffmann, Jurgen, to Kraftwerk Union Aktiengesellschaft. Live steam shut-off device for pressurized water reactors. 4,280,871, Cl. 176-38.000.
Hoffmann-La Roche Inc.: *See*—
Field, George F.; and Zally, William J., 4,281,142, Cl. 548-343.000.
Fischli, Albert E.; and Szente, Andre, 4,281,188, Cl. 564-51.000.
LeMahieu, Ronald A.; and Nason, William C., 4,281,127, Cl. 544-287.000.
Tilley, Jefferson W., 4,281,189, Cl. 564-92.000.
Walser, Armin; and Fryer, Rodney I., 4,280,957, Cl. 260-244.400.
Hofstein, Steven R., to World Medical Marketing Corporation. Foot exerciser. 4,280,486, Cl. 128-25.00B.
Hogg, Gerald J.; Newman, Robert A.; and Pfeifer, Robert F., to Motorola Inc. Key management for encryption/decryption systems. 4,281,216, Cl. 178-22.080.
Hoglund, Hans E.; and Peterson, Per V., to Sunds Defibrator Aktiebolag. Method for refining lignocellulose-containing material. 4,280,868, Cl. 162-28.000.

Hojo, Shiro; Hasegawa, Yoichi; Ichimiya, Tuyoshi; and Kimura, Kazuo, to Japan Hydrazine Co., Inc. Process for producing methylhydrazines. 4,281,198, Cl. 564-464.000.

Holac-Maschinenbau GmbH: *See*—
Kienzl, Arnold, 4,280,385, Cl. 83-404.300.

Holbro A.G.: *See*—
Taylor, Frank, 4,280,336, Cl. 62-457.000.

Holcomb, John W.: *See*—
Jackson, Jerald A.; and Holcomb, John W., 4,280,664, Cl. 241-39.000.

Holland, Charles L., to General Dynamics. Vacuum curing tool for composite materials. 4,280,804, Cl. 425-388.000.

Hollister Incorporated: *See*—
Jensen, Marvin E., 4,280,498, Cl. 128-283.000.

Holt, Dennis S., to Owens-Corning Fiberglas Corporation. Method for collecting fibrous material. 4,280,253, Cl. 19-296.000.

Homan, Gary R.; and Blevins, Jan M., to Dow Corning Corporation. Novel mercaptoorganopolysiloxanes. 4,281,094, Cl. 528-30.000.

Homola, Andrew M.; and Rice, Sondra L., to International Business Machines Corporation. Magnetic particle dispersions. 4,280,918, Cl. 252-62.510.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kouyama, Mikihiro; and Funabashi, Katsunori, 4,280,582, Cl. 180-219.000.
Ohmori, Taiji; Tsuchiya, Yoshikazu; Sato, Makoto; Miyakawa, Yoshitaka; and Fujii, Etsuo, 4,280,740, Cl. 303-92.000.

Honeywell Inc.: *See*—
Newbold, William F., 4,281,299, Cl. 333-187.000.
Szonntagh, Eugene L., 4,280,823, Cl. 55-15.000.
Szonntagh, Eugene L., 4,280,889, Cl. 204-195.00F.

Hopper, Roger J.; Sturm, Budd H.; and Geiser, Joseph F., to Goodyear Tire & Rubber Company, The. Vulcanization of rubber with 2-(alkylsulfinyl)-benzothiazoles. 4,280,967, Cl. 260-785.000.

Horgan, Anthony M.; and Radler, Richard W., to Xerox Corporation. Overcoated photoreceptor containing injecting contact. 4,281,054, Cl. 430-59.000.

Horgen, Lyle: *See*—
Eck, Leonard F.; and Horgen, Lyle, 4,280,280, Cl. 33-203.120.

Horike, Masanori, to Ricoh Company, Ltd. Deflection compensated ink ejection printing apparatus. 4,281,332, Cl. 346-75.000.

Hornsby, William M.: *See*—
Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, 4,280,768, Cl. 403-3.000.

Hort, Eugene V.: *See*—
Parthasarathy, R.; and Hort, Eugene V., 4,280,959, Cl. 260-346.110.

Horton, Gilbert L.: *See*—
King, James F.; and Horton, Gilbert L., 4,280,350, Cl. 72-7.000.

Hosiden Electronics Co., Ltd.: *See*—
Nakagawa, Sadayoshi; and Shinohara, Mitsuharu, 4,281,222, Cl. 179-111.00E.

Hosono, Takashi: *See*—
Mitamura, Ichiro; Isono, Katsuo; and Hosono, Takashi, 4,281,340, Cl. 358-67.000.

Hossom, Miles G.: *See*—
Kraft, Thomas L.; Vick, Howard A.; and Hossom, Miles G., 4,281,387, Cl. 364-497.000.

Hoveler, Egon: *See*—
Zodrow, Rudolf; and Hoveler, Egon, 4,280,866, Cl. 156-568.000.

Hovey, Ralph J., to Bunker Ramo Corporation. Method for electroplating selected areas of article and articles plated thereby. 4,280,882, Cl. 204-15.000.

Howard, Peter B.; and Broadhurst, Peter J., to Tioxide Group Limited. Aqueous dispersions. 4,280,849, Cl. 106-300.000.

Howe, Milton A., Jr., to W. R. Grace & Co., Cryovac Division. Bag dispenser. 4,280,811, Cl. 493-386.000.

HPM Corporation: *See*—
Bishop, Thomas G., 4,280,972, Cl. 264-39.000.

Hsu, Teh-An: *See*—
Tsao, George T.; Ladisch, Michael R.; Ladisch, Christine M.; and Hsu, Teh-An, 4,281,063, Cl. 435-99.000.

Huang, Alan, to Leland Stanford Junior University. Number theoretic processor. 4,281,391, Cl. 364-746.000.

Huang, Chor: *See*—
Yannas, Ioannis V.; Gordon, Philip L.; Huang, Chor; Silver, Frederick H.; and Burke, John F., 4,280,954, Cl. 260-123.700.

Hubenett, Fritz, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the preparation of alkanesulfonyl chlorides. 4,280,966, Cl. 260-543.00R.

Hudler, Heinz. Apparatus for detecting postage stamps on envelopes. 4,281,243, Cl. 250-223.00R.

Hudson's Bay Oil and Gas Company Limited: *See*—
Jagodzinski, Richard F.; and Kerr, Richard K., 4,280,990, Cl. 423-574.00R.

Huelsekopf, Alfred G. Window frame assembly. 4,280,309, Cl. 52-212.000.

Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Acrylate monomers and photopolymerizable compositions containing same. 4,281,152, Cl. 560-52.000.

Hughes Aircraft Company: *See*—
Zurcher, Rudolf F., 4,280,506, Cl. 128-690.000.

Hughes, Rory R.: *See*—
Ferguson, Fred E.; Hughes, Rory R.; and Fersch, Kenneth E., 4,280,830, Cl. 71-25.000.

Hughes, Septimus: *See*—
Ward, Christopher J.; and Hughes, Septimus, 4,280,619, Cl. 198-823.000.

Hughes, William G.: *See*—
Sidi, Henri; and Hughes, William G., 4,281,178, Cl. 562-412.000.

Humbert, A. Robert. Keyhole illuminating apparatus. 4,281,368, Cl. 362-100.000.

Humbert, Daniel; Clemence, Francois; and Dagnaux, Michele, to Roussel Uclaf. [4H]-1,3-Benzodioxin-2-carboxylic acids. 4,281,012, Cl. 424-278.000.

Hummel, Robert A. Intraocular lens device. 4,280,232, Cl. 3-13.000.

Hunt, Theodore R., to Wagner, Morris S., a part interest. Selection switching apparatus. 4,281,314, Cl. 340-147.00R.

Hunt, Walter G.; Kovats, Leslie P.; and Bovier, Edward M., to Anheuser-Busch, Incorporated. Cold water hydrating starch. 4,281,111, Cl. 536-111.000.

Hurlemann, Ernst, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Cartridge feed apparatus for an automatic firing weapon. 4,280,392, Cl. 89-33.0SF.

Huss, Horst: *See*—
Rassmann, Christoph; Hauschopp, Alois; Schwolow, Gunter; and Huss, Horst, 4,280,733, Cl. 299-34.000.

Hutchinson, Peter; and Pauk, Henry T., to Nashua Corporation. Cassette with lockable lift plate. 4,280,692, Cl. 271-160.000.

Hyatt, John A.; French, Stephen E.; and Maggiulli, Cataldo A., to Eastman Kodak Company. Process for preparing 1-aryl-3-amino-5-pyrazolones. 4,281,143, Cl. 548-360.000.

Hyman, Gregory E.: *See*—
Greenberg, Lawrence J.; and Hyman, Gregory E., 4,280,809, Cl. 434-343.000.

Iatron Laboratories, Inc.: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,281,181, Cl. 562-453.000.

Ichiki, Takemoto; Yoshida, Ryo; Sumida, Seizo; and Katsuzo, Kamoshita, to Sumitomo Chemical Company, Limited. Herbicidal N-phenyl-N-methylurea derivatives. 4,280,835, Cl. 71-120.000.

Ichimiya, Tuyoshi: *See*—
Hojo, Shiro; Hasegawa, Yoichi; Ichimiya, Tuyoshi; and Kimura, Kazuo, 4,281,198, Cl. 564-464.000.

ICI Americas Inc.: *See*—
Hartmann, Ludwig A., 4,280,965, Cl. 260-465.00D.
Keihm, Neil W., 4,280,638, Cl. 222-180.000.

Iezuka, Isamu: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,280,459, Cl. 123-307.000.

Ignatowicz, Alexander M., to Western Electric Company, Inc. Connector arranged to permanently lock onto a cable. 4,280,746, Cl. 339-107.000.

Ihara Chemical Industry Co., Ltd.: *See*—
Nakayama, Yoshiki; Higuchi, Yasushi; and Yazawa, Chihiro, 4,280,958, Cl. 260-326.11R.

Ihara, Sinji, to Matsushita Electric Works, Ltd. Brush attachment to hair dresser. 4,280,517, Cl. 132-9.000.

Iino, Yasuo: *See*—
Kametani, Yoshiya; and Iino, Yasuo, 4,281,175, Cl. 560-217.000.

Iizuka, Chiyokichi; and Maeda, Hiroaki, to Noda Shokkin Kogyo Kabushiki Gaisha. Method of accelerating coloring and sweetening of citrus fruits. 4,281,021, Cl. 426-61.000.

Ijas, Seppo, to Oy Ensio Miettinen AB. Device for driving root supports of poles into the ground. 4,280,567, Cl. 173-129.000.

Ikeda, Hiroharu; and Shimozato, Yasuyuki, to Japan Synthetic Rubber Company, Ltd. Rubber compound capable of giving a vulcanized rubber having a high modulus of elasticity. 4,281,085, Cl. 525-326.000.

Ikegami, Shiro: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,281,015, Cl. 424-287.000.

Illinois Tool Works Inc.: *See*—
McVey, John K., 4,281,308, Cl. 337-407.000.

Imai, Terutoyo: *See*—
Kuwano, Yukinori; Imai, Terutoyo; and Umetani, Masakazu, 4,281,208, Cl. 136-249.000.

Imperial Chemical Industries Limited: *See*—
Garden, William D., 4,281,093, Cl. 528-15.000.

Inada, Kohji: *See*—
Miyake, Tetsuya; Ogawa, Norito; Inada, Kohji; and Takeda, Kunihiko, 4,280,984, Cl. 423-6.000.

Inami, Yasuhiko: *See*—
Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, 4,280,754, Cl. 350-357.000.

Industrial Electronic Rubber Co.: *See*—
Murray, Myles N., 4,280,390, Cl. 411-542.000.

Industrie Pirelli S.p.A.: *See*—
Mancosu, Federico, 4,280,484, Cl. 126-450.000.

Inger, Siegfried, to Palitex Project Company GmbH. Textile yarn processing machine with yarn break monitoring mechanism. 4,280,322, Cl. 57-81.000.

Inokuti, Yukio; Shimizu, Yoh; and Shimanaka, Hiroshi, to Kawasaki Steel Corporation. Method for producing grain-oriented silicon steel sheets having a very high magnetic induction and a low iron loss. 4,280,856, Cl. 148-111.000.

Inoue, Mitsuyori; and Yamabe, Akira, to Iwatani Sangyo Kabushiki Kaisha. Process for manufacturing cocoa powder. 4,281,027, Cl. 426-631.000.

Institut Francais du Petrole: *See*—
Daniel, Edmond; Guesnon, Jean; and Laurencin, Andre, 4,280,719, Cl. 285-90.000.

Interatom, International Atomreaktorbau GmbH: *See*—
Hahn, Gunter, 4,280,873, Cl. 176-65.000.

Intermedics, Inc.: *See*—
Baker, Ross G., Jr.; and Van Calfee, Richard, 4,280,502, Cl. 128-419.0PG.

International Business Machines Corporation: *See*—
Bertin, Claude L.; De La Moneda, Francisco H.; and Soderman, Donald A., 4,280,855, Cl. 148-1.500.
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., 4,281,057, Cl. 430-270.000.
Dean, Homer B.; and Mahurin, Ballard T., 4,280,263, Cl. 29-132.000.
Escott, Barnee M.; Reynolds, Jerald J.; and Ward, William C., 4,281,032, Cl. 427-135.000.
Heath, John S., 4,280,767, Cl. 400-216.200.
Homola, Andrew M.; and Rice, Sondra L., 4,280,918, Cl. 252-62.510.

International Flavors & Fragrances Inc.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,280,515, Cl. 131-276.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,280,933, Cl. 252-522.00R.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,281,177, Cl. 260-513.00R.

International Harvester Company: *See*—
Breen, Dale H., 4,280,566, Cl. 172-604.000.
Fischer, Raymond C., 4,280,419, Cl. 111-80.000.
McHenney, John R.; and Knowles, Marlin A., 4,280,748, Cl. 339-147.00R.

International Medical Electronics, Ltd.: *See*—
Berry, Fred M., 4,281,362, Cl. 361-437.000.

International Nickel Co., Inc., The: *See*—
Subramanian, Kohur N.; Glaum, Gerald V.; and Walli, Einar, 4,280,988, Cl. 423-140.000.

Intertherm Inc.: *See*—
Khan, Asadulla R.; and Boning, Otto H., 4,280,332, Cl. 62-156.000.

Irick, Gether, Jr.; and Wang, Richard H. S., to Eastman Kodak Company. Piperidinyl hydrogen 2-hydroxyalkyl phosphates and metal salts thereof. 4,281,129, Cl. 546-6.000.

Irwin, Roger F. Catalyst unloading mechanism. 4,280,983, Cl. 422-219.000.

Ishida, Yukihito: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,281,015, Cl. 424-287.000.

Ishihara, Nobuoki: *See*—
Shiozaki, Morio; Kawashima, Mitsuaki; Shimoyama, Yoshiaki; and Ishihara, Nobuoki, 4,280,837, Cl. 75-54.000.

Ishii, Yashunori: *See*—
Sawa, Tsuna; and Ishii, Yashunori, 4,281,268, Cl. 313-60.000.

Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, to Sato, Ryuichi. Germanium-containing organic polymer and it's use in the treatment of psychoneurological disorders. 4,281,015, Cl. 424-287.000.

Ishizaki, Hidenosuke. Button. 4,280,255, Cl. 24-95.000.

Isono, Katsuo: *See*—
Mitamura, Ichiro; Isono, Katsuo; and Hosono, Takashi, 4,281,340, Cl. 358-67.000.

Isuzu Motors Ltd.: *See*—
Kawamura, Hideo; and Itou, Takahiko, 4,280,452, Cl. 123-179.0BG.

Itek Corporation: *See*—
Albertinetti, Nedo P., 4,280,756, Cl. 350-360.000.

Ito, Hiroshi; and Sakaguchi, Shigeya, to Nippon Tungsten Co., Ltd. Method for manufacturing a mechanical seal ring. 4,280,841, Cl. 75-203.000.

Ito, Hiroshi; Endo, Ichiro; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Image forming member. 4,281,052, Cl. 430-48.000.

Ito, Kazuhiko: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,280,459, Cl. 123-307.000.

Ito, Masazumi: *See*—
Murata, Tomoji; and Ito, Masazumi, 4,281,244, Cl. 250-225.000.

Ito, Thomas I.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Ito, Thomas I.; and Nakahara, James H., 4,281,185, Cl. 564-13.000.

Ito, Tsugio; Aizawa, Kenshiro; and Okada, Hisashi, to Nippon Gakki Seizo Kabushiki Kaisha. Pickup cartridge for reproducing signals recorded on a 45-45 stereophonic record disk. 4,281,225, Cl. 369-139.000.

Itoh, Akira: *See*—
Moriguchi, Hiroyuki; Haneda. Satoshi; Kaneko, Tadashi; Itoh, Akira; Shimura, Takeo; Matsumoto, Masanori; and Nomori, Hiroyuki, 4,281,055, Cl. 430-60.000.

Itou, Takahiko: *See*—
Kawamura, Hideo; and Itou, Takahiko, 4,280,452, Cl. 123-179.0BG.

ITT Industries, Inc.: *See*—
Adam, Fritz G., 4,281,261, Cl. 307-270.000.
Lupertz, Hans-Henning; and Riedel, Peter, 4,280,738, Cl. 303-6.00C.

Ives, Jeffrey L., to Pfizer Inc. Phenylguanidine therapeutic agents. 4,281,004, Cl. 424-263.000.

Iwasaki, Hideo: *See*—
Shibata, Hiroshi; Iwasaki, Hideo; and Yamada, Kunio, 4,280,854, Cl. 148-1.500.

Iwata, Hiroshi; Yamaoka, Tetsuo; and Mitsui, Hajime, to West Electric Company, Ltd. Flash camera. 4,280,760, Cl. 354-21.000.

Iwata, Toshihiko: *See*—
Shikano, Hiroshi; and Iwata, Toshihiko, 4,280,844, Cl. 106-56.000.

Iwatani Sangyo Kabushiki Kaisha: *See*—
Inoue, Mitsuyori; and Yamabe, Akira, 4,281,027, Cl. 426-631.000.

Izumi, Kaichi, to Kao Soap Company Limited. Apparatus for the measurement of the mechanical output of induction motors. 4,281,288, Cl. 324-158.0MG.

Izumita, Morishi: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Sato, Kazuhiro; Umemoto, Masuo; Akiyama, Toshiyuki; and Izumita, Morishi, 4,281,338, Cl. 358-44.000.

J. M. Huber Corporation: *See*—
Wason, Satish K., 4,280,822, Cl. 51-308.000.

J. Ray McDermott & Co., Inc.: *See*—
Petrie, Warren A., 4,280,237, Cl. 9-8.00R.

Jackson, Barry N., to American Hospital Supply Corporation. Pulsating inflatable-deflatable pad assembly and method. 4,280,487, Cl. 128-33.000.

Jackson, Jerald A.; and Holcomb, John W. Solids reducing and mixing device. 4,280,664, Cl. 241-39.000.

Jackson, Robert. Boat hull anti-fouling shroud. 4,280,436, Cl. 114-222.000.

Jackson, Robert. Boat hull anti-fouling shroud. 4,280,437, Cl. 114-222.000.

Jackson, Robert. Boat hull anti-fouling shroud. 4,280,438, Cl. 114-222.000.

Jackson, Robert. Boat hull anti-fouling shroud. 4,280,439, Cl. 114-222.000.

Jacobellis, A. A., to Greer Hydraulics, Incorporated. Low pressure, low cost accumulator. 4,280,533, Cl. 138-30.000.

Jacobsen, Finn; and Gustavsson, Lennart, to Kamyr Aktiebolag. Separation of dense impurities from a fluid. 4,280,902, Cl. 209-211.000.

Jacobsen, Stephen C.: *See*—
Stenehjem, Jerome C.; and Jacobsen, Stephen C., 4,280,695, Cl. 272-8.00N.

Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, to L'Oreal. N-(2,5-Dihydroxy-3,4,6-trimethyl-benzyl)-acrylamide and-methacrylamide. 4,281,192, Cl. 564-207.000.

Jagenberg Werke AG: *See*—
Zodrow, Rudolf; and Hoveler, Egon, 4,280,866, Cl. 156-568.000.

Jager, Horst: *See*—
Schreiner, Kurt; Jager, Horst; and Schwaebel, Richard, 4,280,956, Cl. 260-242.200.

Jagodzinski, Richard F.; and Kerr, Richard K., to Hudson's Bay Oil and Gas Company Limited; and Alberta Energy Company Ltd. High pressure process for recovery of sulphur from gases. 4,280,990, Cl. 423-574.00R.

James, David B.: *See*—
Wetton, Raymond E.; and James, David B., 4,281,072, Cl. 525-4.000.

James, Rex L.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.

Japan Air Lines Co., Ltd.: *See*—
Mihirogi, Kiyoshi, 4,280,412, Cl. 104-281.000.

Japan Hydrazine Co., Inc.: *See*—
Hojo, Shiro; Hasegawa, Yoichi; Ichimiya, Tuyoshi; and Kimura, Kazuo, 4,281,198, Cl. 564-464.000.

Japan Synthetic Rubber Company, Ltd.: *See*—
Ikeda, Hiroharu; and Shimozato, Yasuyuki, 4,281,085, Cl. 525-326.000.

Jarman, Alonzo B.: *See*—
Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,280,396, Cl. 91-320.000.

Jarowenko, Wadym; and Solarek, Daniel B., to National Starch and Chemical Corporation. Pollution-free cationization of starch. 4,281,109, Cl. 536-50.000.

Jarva, Curt W., to American Science and Engineering, Inc. Positive feedback meter pulse initiator. 4,281,325, Cl. 340-870.290.

Jaworski, Eugene: *See*—
Katzman, Allison W.; Disko, Harry; and Jaworski, Eugene, 4,280,297, Cl. 46-41.000.

Jedlinski, Stanislaw: *See*—
Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, 4,281,074, Cl. 525-40.000.

Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, to Polska Akademia Nauk, Zaklad Polimerow. Process of manufacturing cured unsaturated polyester resins with a regular network structure. 4,281,074, Cl. 525-40.000.

Jenkins, Russell J.: *See*—
Bush, Richard W.; Jenkins, Russell J.; and Rie, John E., 4,280,888, Cl. 204-159.150.

Jensen, James H., to Armour and Company. Device for handling meat logs and other articles. 4,280,618, Cl. 198-782.000.

Jensen, Marvin E., to Hollister Incorporated. Valved drain assembly for urostomy pouch. 4,280,498, Cl. 128-283.000.

Jerome, Robert: *See*—
Heuschen, Jean; Jerome, Robert; and Teyssie, Philippe, 4,281,087, Cl. 525-361.000.

Jersey, Chester A.; and Kiscaden, Roy W., to Westinghouse Electric Corp. Gas turbine fuel control having fuel viscosity compensation to provide improved ignition reliability. 4,280,323, Cl. 60-39.14R.

Jigami, Yoshifumi: *See*—
Suzuki, Osamu; Jigami, Yoshifumi; Nakasato, Satoshi; and Hashimoto, Tetsutaro, 4,281,064, Cl. 435-134.000.

Johansson, Kurt E. System for measurement of force with directionally orientated strain gauges. 4,280,363, Cl. 73-768.000.

John Wyeth & Brother Limited: *See*—
Ward, Terence J., 4,281,132, Cl. 546-224.000.

Johns-Manville Corporation: *See*—
Lockard, Donald F., 4,280,311, Cl. 52-748.000.

Johnsen, James B.; and Oien, Hal J., to Jordco, Inc. Endodontic file holder. 4,280,808, Cl. 433-77.000.

Johnson, Allen S., Jr., to Staclean Diffuser Company. Bag-type filter apparatus with high pressure air jet cleaning. 4,280,826, Cl. 55-302.000.

Johnson, Donald L.; Bond, John L.; Rogols, Saul; and Salter, John W., to Henkel Corporation. Pressure sensitive recording sheet containing size classified cereal starch granules. 4,280,718, Cl. 282-27.500.

Johnson, Glenn W., Jr. Ankle brace. 4,280,489, Cl. 128-80.00H.

Johnson, Lawrence N.: *See*—
Moore, Dennis G.; and Johnson, Lawrence N., 4,281,367, Cl. 362-96.000.

Johnson, Leighton C., to Miles Laboratories, Inc. Apparatus for producing monocellular layers of cell-containing biological fluid. 4,280,442, Cl. 118-52.000.

Johnson, Peter D., to General Electric Company. High intensity discharge lamp with coating on arc discharge tube. 4,281,267, Cl. 313-25.000.

Johnson, Ronald E., to Corning Glass Works. Thermoplastic ink composition for decorating glass, glass-ceramic, and ceramic ware. 4,280,939, Cl. 260-23.0AR.

Johnson, William H.: *See*—
Frazier, Lawrence M.; and Johnson, William H., 4,281,327, Cl. 343-12.00R.

Johnston, David B. R.: *See*—
Christensen, Burton G.; Guthikonda, Ravindra N.; Johnston, David B. R.; and Schmitt, Susan M., 4,281,002, Cl. 424-263.000.

Jolly, Jean: *See*—
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,281,182, Cl. 562-506.000.

Jones, Donald W.: *See*—
Keim, Thomas A.; and Jones, Donald W., 4,281,264, Cl. 310-194.000.

Jones, Robert H. Hand held granulator. 4,280,666, Cl. 241-169.100.

Jones, Terry L. Protective shield for a baseboard or the like. 4,280,444, Cl. 118-504.000.

Jones, Warren W.: *See*—
Calfo, Raymond M.; Mulach, Arthur; and Jones, Warren W., 4,281,266, Cl. 310-256.000.

Jordco, Inc.: *See*—
Johnsen, James B.; and Oien, Hal J., 4,280,808, Cl. 433-77.000.

Jorgensen, Allen R.: *See*—
Leanna, Dale D.; Jorgensen, Allen R.; Terp, Gerald W.; LaHaye, John; and Nehring, Kenneth L., 4,280,669, Cl. 242-56.00A.

Joseph, Theodore H.: *See*—
Pitchon, Esra; O'Rourke, Joseph D.; and Joseph, Theodore H., 4,280,851, Cl. 127-33.000.

Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, to Rohm GmbH. Process for graft copolymerization. 4,281,081, Cl. 525-281.000.

Joy Manufacturing Company: *See*—
Peveto, John E., 4,280,397, Cl. 91-452.000.

Jung, Arno, to Pfaff Industriemaschinen GmbH. Guide device for sewing machines. 4,280,422, Cl. 112-147.000.

Jung, Richard: *See*—
Thomas, Gerhard; and Jung, Richard, 4,280,877, Cl. 202-91.000.

Justman, Daniel B., to Smith International, Inc. Wall contacting tool. 4,280,742, Cl. 308-4.00A.

K A Bergs Smide AB: *See*—
Fredriksson, Lars O. A., 4,280,728, Cl. 294-78.00R.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Kanai, Seikichi; Komiyama, Kunihiko; and Togashi, Koichi, 4,280,464, Cl. 123-447.000.

Kabushiki Kaisha Shikishima Tipton: *See*—
Kobayashi, Hisamine, 4,280,304, Cl. 51-315.000.

Kabushiki Kaisha Toyoto Chuo Kenkyusho: *See*—
Tanasawa, Yasusi; Saito, Akinori; and Kawamura, Kiyomi, 4,280,661, Cl. 239-409.000.

Kabushikigaisha Nippon Kogu Seisakusho: *See*—
Hayama, Takatsura, 4,280,774, Cl. 407-36.000.

Kagerhuber, Franz: *See*—
Bayer, Franz; Schubert, Hermann; and Kagerhuber, Franz, 4,280,552, Cl. 164-448.000.

Kahlbrock, Heinz: *See*—
Bauer, Henry C.; Burns, Gary J.; Buzzard, Clair A.; Gordon, Travis H.; Kahlbrock, Heinz; Ricca, Robert F.; and Zachok, Robert M., 4,281,315, Cl. 340-147.00R.

Kainmuller, Thomas; Habermeier, Jurgen; and Buxbaum, Lothar, to Ciba-Geigy Corporation. Dicarboxylic acids containing triazine rings, and polyesters formed from these dicarboxylic acids. 4,281,103, Cl. 528-289.000.

Kajimoto, Tsutomu: *See*—
Marukawa, Katsukiyo; Yamazaki, Isao; Anezaki, Syoji; and Kajimoto, Tsutomu, 4,280,838, Cl. 75-60.000.

Kali-Chemie Pharma GmbH: *See*—
Wischniewski, Martin; Feicho, Lutz; Fischer, Gerhard; and Peschke, Guenter, 4,280,971, Cl. 264-15.000.

Kallis, Karl-Heinz, to Veb Arzneimittelwerk Dresden. Test for the identification of glucose and for the determination of glucose. 4,281,062, Cl. 435-14.000.

Kamensky, Veniamin V.: *See*—
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Tupitsyn, Konstantin K., 4,280,573, Cl. 175-418.000.

Kametani, Yoshiya; and Iino, Yasuo, to Nitto Chemical Industry Co., Ltd. Process for producing dimethylaminoethyl methacrylate. 4,281,175, Cl. 560-217.000.

Kamimura, Masaaki, to Kansai Paint Company, Limited. Thermosetting acrylic resin powder coating compositions. 4,281,076, Cl. 525-124.000.

Kamshitsky, Pavel V.: *See*—
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Mironenko, Vyacheslav G.; and Kamshitsky, Pavel V., 4,281,304, Cl. 335-72.000.

Kamyr Aktiebolag: *See*—
Jacobsen, Finn; and Gustavsson, Lennart, 4,280,902, Cl. 209-211.000.

Kanai, Seikichi; Komiyama, Kunihiko; and Togashi, Koichi, to Kabushiki Kaisha Komatsu Seisakusho. Fuel injection control system for internal combustion engine. 4,280,464, Cl. 123-447.000.

Kanasugi, Haruki: *See*—
Kurosu, Yasuhisa; Kawada, Hiroshi; Kanasugi, Haruki; and Kashima, Akiko, 4,281,016, Cl. 424-300.000.

Kaneko, Hiroaki: *See*—
Yamaguchi, Hiroshi; Kaneko, Hiroaki; and Nagano, Toshihiro, 4,280,455, Cl. 123-196.00M.

Kaneko, Tadashi: *See*—
Moriguchi, Hiroyuki; Haneda, Satoshi; Kaneko, Tadashi; Itoh, Akira; Shimura, Takeo; Matsumoto, Masanori; and Nomori, Hiroyuki, 4,281,055, Cl. 430-60.000.

Kaneko, Toyohiko: *See*—
Sawa, Toshio; Kubota, Masayoshi; Takahashi, Sankichi; and Kaneko, Toyohiko, 4,280,886, Cl. 204-149.000.

Kansai Paint Company, Limited: *See*—
Kamimura, Masaaki, 4,281,076, Cl. 525-124.000.

Kansas Jack, Inc.: *See*—
Eck, Leonard F.; and Horgen, Lyle, 4,280,280, Cl. 33-203.120.

Kant, Michel: *See*—
Virolleau, Alain F.; Kant, Michel; and Burnier, Pierre H., 4,281,263, Cl. 310-13.000.

Kanwar, Randhir, to Automotive Products Limited. Brake applying device. 4,280,603, Cl. 188-343.000.

Kao Soap Company Limited: *See*—
Izumi, Kaichi, 4,281,288, Cl. 324-158.0MG.

Karn, Donald L.: *See*—
Hamisch, Paul H., Jr; Karn, Donald L.; and Makley, James A., 4,280,863, Cl. 156-387.000.

Karr, Dieter E.; and Shanks, Scott B., to Biotronik Mess-und Therapiegerate G.m.b.H. & Co. Cardiac pacemaker electrode for transvenous application. 4,280,512, Cl. 128-785.000.

Kartsounes, George T.: *See*—
Ahrens, Frederick W.; and Kartsounes, George T., 4,281,256, Cl. 290-1.00R.

Kasai, Yoshihiko: *See*—
Gounji, Takashi; and Kasai, Yoshihiko, 4,281,298, Cl. 333-186.000.

Kashima, Akiko: *See*—
Kurosu, Yasuhisa; Kawada, Hiroshi; Kanasugi, Haruki; and Kashima, Akiko, 4,281,016, Cl. 424-300.000.

Kason Hardware Corporation: *See*—
Berkowitz, Irving L.; and Bourgeois, John J., 4,280,725, Cl. 292-223.000.

Kast, Michael A.: *See*—
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,280,478, Cl. 126-420.000.

Katayose, Shinji; Sasabe, Yukiyoshi; Yokota, Yoshiaki; Kuroki, Junsuke; and Torii, Shuuji, to Nissan Motor Company, Limited. Aerial car suspension. 4,280,411, Cl. 104-112.000.

Kato, Shoichi: *See*—
Kobayashi, Kenji; Hibi, Katuhiko; Kobayashi, Hisabumi; and Kato, Shoichi, 4,280,834, Cl. 71-103.000.

Katsuzo, Kamoshita: *See*—
Ichiki, Takemoto; Yoshida, Ryo; Sumida, Seizo; and Katsuzo, Kamoshita, 4,280,835, Cl. 71-120.000.

Katzman, Allison W.; Disko, Harry; and Jaworski, Eugene, to Marvin Glass & Associates. Doll with water activated shower cap. 4,280,297, Cl. 46-41.000.

Kawabata, Toshihiko: *See*—
Saito, Takashi; Asai, Kiyotsugu; and Kawabata, Toshihiko, 4,280,944, Cl. 260-29.2TN.

Kawada, Hiroshi: *See*—
Kurosu, Yasuhisa; Kawada, Hiroshi; Kanasugi, Haruki; and Kashima, Akiko, 4,281,016, Cl. 424-300.000.

Kawai, Taneichi: *See*—
Nishida, Kouji; Miyake, Osamu; Kawai, Taneichi; and Hamajima, Shigemitsu, 4,280,420, Cl. 112-103.000.

Kawai, Toshio; Yamashita, Junichi; and Takamatsu, Jun, to Hitachi, Ltd. Nuclear reactor core structure with zones of varying enrichment. 4,280,874, Cl. 176-78.000.
Kawajiri, Yoshio: *See*—
Matsuhisa, Koh; Takezawa, Mamoru; and Kawajiri, Yoshio, 4,280,693, Cl. 271-246.000.
Kawamura, Hideo; and Itou, Takahiko, to Isuzu Motors Ltd. Engine start enhancement device. 4,280,452, Cl. 123-179.0BG.
Kawamura, Kiyomi: *See*—
Tanasawa, Yasusi; Saito, Akinori; and Kawamura, Kiyomi, 4,280,661, Cl. 239-409.000.
Kawasaki Steel Corporation: *See*—
Inokuti, Yukio; Shimizu, Yoh; and Shimanaka, Hiroshi, 4,280,856, Cl. 148-111.000.
Kawashima, Mitsuaki: *See*—
Shiozaki, Morio; Kawashima, Mitsuaki; Shimoyama, Yoshiaki; and Ishihara, Nobuoki, 4,280,837, Cl. 75-54.000.
Kayser, Gaston: *See*—
Ferrari, Luciano; Fourest, Bernard; Kayser, Gaston; and Martin, Robert, 4,280,872, Cl. 176-38.000.
Keihm, Neil W., to ICI Americas Inc. Fluid dispensing apparatus. 4,280,638, Cl. 222-180.000.
Keim, Thomas A.; and Jones, Donald W., to General Electric Company. Mounting of armature conductors in air-gap armatures. 4,281,264, Cl. 310-194.000.
Kemp, George T. Low-side oil-separation and re-use system for ammonia-refrigeration apparatus. 4,280,337, Cl. 62-470.000.
Kendall Company, The: *See*—
Arkans, Edward J., 4,280,485, Cl. 128-24.00R.
Kennelly, William J.: *See*—
Kirch, Lawrence S.; and Kennelly, William J., 4,280,928, Cl. 252-432.000.
Kepco, Inc.: *See*—
Nercessian, Sarkis, 4,281,282, Cl. 323-350.000.
Kercheville, James D., to NL Industries, Inc. Salt stable lubricant for water base drilling fluids. 4,280,915, Cl. 252-8.50C.
Kerr, Douglas M.; Crandall, Thomas L.; and Scalf, Daniel J., to Acco Industries Inc. Conveyor system. 4,280,413, Cl. 105-150.000.
Kerr, Richard K.: *See*—
Jagodzinski, Richard F.; and Kerr, Richard K., 4,280,990, Cl. 423-574.00R.
Kerscher, Albert; and Furtner, Walter, to Knorr-Bremse GmbH. Rapid release mechanism for a spring-loaded brake cylinder. 4,280,398, Cl. 92-29.000.
Kesling, Haven S., Jr., to Atlantic Richfield Company. Preparation of unsaturated diesters by catalytic oxidative carbonylation of diolefins. 4,281,173, Cl. 560-204.000.
Kesting, Robert E., to Puropore Inc. Polyoxyethylene grafted membrane materials with grafting links derived from a diisocyanate. 4,280,970, Cl. 264-1.700.
Keyes Fibre Company: *See*—
Boursier, Leon, 4,280,648, Cl. 229-2.5EC.
Keystone International, Inc.: *See*—
Gibbs, Stephen, 4,280,549, Cl. 164-113.000.
Keystone Lighting Corp.: *See*—
Dalton, John, 4,280,724, Cl. 292-87.000.
KGEL Limited: *See*—
Eastham, John F.; and Evans, Peter D., 4,281,265, Cl. 310-254.000.
Khan, Asadulla R.; and Boning, Otto H., to Intertherm Inc. Defrost control monitoring fan motor temperature rise. 4,280,332, Cl. 62-156.000.
Kiefer, John E., to Eastman Kodak Company. Filter for sorption of heavy metals. 4,280,925, Cl. 252-428.000.
Kienzl, Arnold, to Holac-Maschinenbau GmbH. Apparatus for cutting foodstuffs or the like. 4,280,385, Cl. 83-404.300.
Kienzle, Charles; Gebura, Stanley E.; and Boghosian, John W., to BASF Wyandotte Corporation. Method of polymerizing styrene. 4,281,067, Cl. 521-56.000.
Kiessling, Dieter: *See*—
Stoeckigt, Dieter; Kiessling, Dieter; Perner, Johannes; Trieselt, Wolfgang; and Trapp, Horst, 4,280,919, Cl. 252-135.000.
Kikutake, Junichiro: *See*—
Sugiura, Masakuzu; Kikutake, Junichiro; Yoshida, Masaru; and Kondo, Shigeharu, 4,280,992, Cl. 424-1.000.
Kiliman, Douglas A.: *See*—
Wissel, Frank A.; Smith, Donald E.; Martinet, Robert L.; Dapper, Mark J.; and Kiliman, Douglas A., 4,281,412, Cl. 375-86.000.
Kiloking (Proprietary) Limited: *See*—
Henderson, Henning M., 4,280,358, Cl. 73-115.000.
Kimura, Kazuo: *See*—
Hojo, Shiro; Hasegawa, Yoichi; Ichimiya, Tuyoshi; and Kimura, Kazuo, 4,281,198, Cl. 564-464.000.
King, James F.; and Horton, Gilbert L., to Consolidated Foods Corporation. Wire bending system. 4,280,350, Cl. 72-7.000.
King, Paul C. Prevaporizing oil burner and method. 4,280,806, Cl. 431-208.000.
Kinoshita, Takao: *See*—
Ogawa, Yukio; Suzuki, Ryoichi; Kinoshita, Takao; and Uchiyama, Takashi, 4,280,761, Cl. 354-29.000.
Kinson, Philip L., to General Electric Company. Novel halobisphenolethylene polycarbonate-polyester blends. 4,281,088, Cl. 525-439.000.
Kinzler, Hans, to Siemens Aktiengesellschaft. Connection lead-in plug. 4,280,747, Cl. 339-126.0RS.
Kiovsky, Thomas E., to Shell Oil Company. Antiknock component. 4,280,458, Cl. 123-198.00A.
Kirch, Lawrence S.; and Kennelly, William J., to Rohm and Haas Company. Catalyst compositions and their use for the preparation of methacrolein. 4,280,928, Cl. 252-432.000.
Kiscaden, Roy W.: *See*—
Jersey, Chester A.; and Kiscaden, Roy W., 4,280,323, Cl. 60-39.14R.
Kishi, Kenichi; and Sasaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Photographic material. 4,281,059, Cl. 430-551.000.
Kita, Toru: *See*—
Kobayashi, Hiroshi; Kita, Toru; and Fujishiro, Takeshi, 4,280,360, Cl. 73-198.000.
Kitagawa, Tsuneo: *See*—
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,280,763, Cl. 355-14.00R.
Kitzinger, Frank: *See*—
Peacey, John G.; Ebersole, Ralph R.; Kitzinger, Frank; and Viens, Jean-Claude, 4,281,290, Cl. 324-426.000.
Kiwala, Jacob: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,280,515, Cl. 131-276.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,280,933, Cl. 252-522.00R.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,281,177, Cl. 260-513.00R.
Klaiber, George S.; Grajek, Stanley A.; and Hill, Robert S., to Wurlitzer Company, The. Piano soundboard. 4,280,389, Cl. 84-212.000.
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Dithienylalkylamines and process for their production. 4,281,010, Cl. 424-275.000.
Klein, Ottokar: *See*—
Poetsch, Dieter; Becker, Werner; Klein, Ottokar; and Wulf, Rudolf, 4,281,351, Cl. 358-214.000.
Klockner-Humboldt-Deutz AG: *See*—
Ansen, Jakob; Duill, Helmut; and Fasbender, Heinz, 4,280,283, Cl. 34-10.000.
Klomp, Edward D., to General Motors Corporation. Engine with intake ported cylinders and porous port liners for oil control. 4,280,456, Cl. 123-196.00R.
Kloster, Kenneth D., to Alvey, Inc. Strut suspension repair structure. 4,280,602, Cl. 188-322.000.
Kloubert, Udo: *See*—
Rutzen, Horst; Heidrich, Jochen; Bischoff, Martin; Kloubert, Udo; Waltenberger, Peter; and Wegener, Ingo, 4,281,196, Cl. 564-292.000.
Klug, Helmut; and Frey, Hans-Helmut, to Hoechst Aktiengesellschaft. Thermoplastic composition comprising vinyl chloride polymer and two chlorinated polyethylenes. 4,280,940, Cl. 260-23.0XA.
Klupfel, Olaf: *See*—
Zintarra, Helmut; and Klupfel, Olaf, 4,280,617, Cl. 198-699.000.
Knierim, Larry, to Dana Corporation. Utility puller. 4,280,683, Cl. 254-17.000.
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., to Australasian Training Aids (Pty.) Ltd. Firing range. 4,281,241, Cl. 235-400.000.
Knippel, Willis H., to Pullman Incorporated. Hopper car door operating mechanism. 4,280,778, Cl. 414-387.000.
Knoell, Hellmuth: *See*—
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,281,081, Cl. 525-281.000.
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., to Medtronic, Inc. Radiation signal processing system. 4,281,382, Cl. 364-414.000.
Knopf, Robert J., to Union Carbide Corporation. Acrylyl esters of polyester-polyether copolymers. 4,281,172, Cl. 560-185.000.
Knopp, Hans: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,280,260, Cl. 28-255.000.
Knorr-Bremse GmbH: *See*—
Kerscher, Albert; and Furtner, Walter, 4,280,398, Cl. 92-29.000.
Pollinger, Hans, 4,280,598, Cl. 188-218.0XL.
Schorwerth, Mathias, 4,280,597, Cl. 188-218.0XL.
Knorre, Helmut; and Fischer, Joachim, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for automatically controlling the detoxification of waste waters containing nitrite ions. 4,280,914, Cl. 210-743.000.
Knowles, Marlin A.: *See*—
McHenney, John R.; and Knowles, Marlin A., 4,280,748, Cl. 339-147.00R.
Knudson, Donald R., to Massachusetts Institute of Technology. System to effect digital encoding of an image. 4,281,312, Cl. 340-146.3MA.
Kobayashi, Hiroshi; Kita, Toru; and Fujishiro, Takeshi, to Nissan Motor Company, Limited. Fluid measuring device. 4,280,360, Cl. 73-198.000.
Kobayashi, Hisabumi: *See*—
Kobayashi, Kenji; Hibi, Katuhiko; Kobayashi, Hisabumi; and Kato, Shoichi, 4,280,834, Cl. 71-103.000.
Kobayashi, Hisamine, to Kabushiki Kaisha Shikishima Tipton. Deburring method for workpieces. 4,280,304, Cl. 51-315.000.
Kobayashi, Kenji; Hibi, Katuhiko; Kobayashi, Hisabumi; and Kato, Shoichi, to Nippon Kayaku Kabushiki Kaisha. Novel diphenyl ether

derivative and herbicidal composition containing the same as an active component. 4,280,834, Cl. 71-103.000.
Kobayashi, Tomoyuki: *See*—
Usami, Toshimasa; Kobayashi, Tomoyuki; Tatsuta, Sumitaka; and Komine, Shigeo, 4,281,060, Cl. 430-618.000.
Kobe, Inc.: *See*—
Crichlow, Walter W., 4,280,790, Cl. 415-89.000.
Erickson, John W.; and Petrie, Harold L., 4,280,662, Cl. 239-591.000.
Kobelt, Jacob. Control lever assembly. 4,280,371, Cl. 74-480.00B.
Kobylinski, Thaddeus P.: *See*—
Wu, Ching-Yong; and Kobylinski, Thaddeus P., 4,280,924, Cl. 252-416.000.
Koch, Christian: *See*—
Kunstle, Konrad; Reiter, Kurt; and Koch, Christian, 4,280,449, Cl. 122-4.00R.
Koch, Earl E., to Sperry Corporation. Infinite reel adjustment mechanism. 4,280,318, Cl. 56-221.000.
Kocourek, Jan: *See*—
Coupek, Jiri; Filka, Karel; and Kocourek, Jan, 4,281,233, Cl. 260-112.00R.
Koehler, Wolfgang, to Degussa Aktiengesellschaft. Hard solderable metal layers on ceramic. 4,281,041, Cl. 428-336.000.
Koelichen, Harald; and Deutsch, Adolf, to Standardgraph Filler & Fiebig GmbH. Inscription instrument. 4,280,277, Cl. 33-23.00D.
Koerner, Gotz; Kropac, Vaclav; and Rau, Harald, to Th. Goldschmidt AG. Process for the production of aqueous solutions of alkali organosiliconates. 4,281,147, Cl. 556-459.000.
Koerwer, John F., to Union Carbide Corporation. Pyridyloxyphenoxyalkane carboxylic acids and derivatives as sugar enhancers for plants. 4,280,832, Cl. 71-94.000.
Koike, Yoshio: *See*—
Sumi, Takehiko; Oshige, Yoshinobu; Koike, Yoshio; and Matsumoto, Kazuya, 4,281,045, Cl. 428-516.000.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,281,416, Cl. 455-601.000.
Kolb, Erich: *See*—
Wiesenberger, Alfred; Mager, Lutz; Kolb, Erich; and Kreim, Karl, 4,280,634, Cl. 220-270.000.
Kolpe, Dieter: *See*—
Bethkenhagen, Jurgen; and Kolpe, Dieter, 4,280,509, Cl. 128-766.000.
Komatsu, Makoto; and Tanaka, Toru, to Mitsubishi Gas Chemical Company, Inc. Process for producing terephthalic acid with high purity. 4,281,179, Cl. 562-416.000.
Komine, Shigeo: *See*—
Usami, Toshimasa; Kobayashi, Tomoyuki; Tatsuta, Sumitaka; and Komine, Shigeo, 4,281,060, Cl. 430-618.000.
Komiyama, Kunihiko: *See*—
Kanai, Seikichi; Komiyama, Kunihiko; and Togashi, Koichi, 4,280,464, Cl. 123-447.000.
Kondo, Shigeharu: *See*—
Sugiura, Masakuzu; Kikutake, Junichiro; Yoshida, Masaru; and Kondo, Shigeharu, 4,280,992, Cl. 424-1.000.
Kondo, Takeo: *See*—
Hanai, Kiyoshi; and Kondo, Takeo, 4,280,717, Cl. 280-663.000.
Kondow, Ryotaro; and Okamoto, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Systems for detecting faults in electric power systems. 4,281,386, Cl. 364-492.000.
Konig, Klaus: *See*—
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; Lehnert, Gunther; and Lindner, Christian, 4,281,101, Cl. 528-196.000.
Konishi, Jin-emon, to Nippon Zoki Pharmaceutical Co., Ltd. Hydantoin derivatives. 4,281,009, Cl. 424-273.00R.
Konishiroku Photo Industry Co., Ltd.: *See*—
Kishi, Kenichi; and Sasaki, Takashi, 4,281,059, Cl. 430-551.000.
Moriguchi, Hiroyuki; Haneda, Satoshi; Kaneko, Tadashi; Itoh, Akira; Shimura, Takeo; Matsumoto, Masanori; and Nomori, Hiroyuki, 4,281,055, Cl. 430-60.000.
Konstantouros, Efthimios, to Siemens Aktiengesellschaft. Method of regenerating ammoniacal etching solutions useful for etching metallic copper. 4,280,887, Cl. 204-150.000.
Kontrovitz, Harold S.: *See*—
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,334, Cl. 346-153.100.
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,335, Cl. 346-153.100.
Koppers Company, Inc.: *See*—
Harris, Edward, 4,280,681, Cl. 251-229.000.
Kornatowski, Boleslaw: *See*—
Cook, Albert N.; and Kornatowski, Boleslaw, 4,281,310, Cl. 338-108.000.
Kornrumpf, William P., to General Electric Company. Power supply for magnetron and the like loads. 4,281,372, Cl. 363-20.000.
Kory, Daniel R.: *See*—
Fellmann, Robert P.; Kory, Daniel R.; and Staas, William H., 4,281,084, Cl. 525-309.000.
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Mironenko, Vyacheslav G.; and Kamshitsky, Pavel V. Electric circuit switchgear. 4,281,304, Cl. 335-72.000.
Kostanecki, Andrew T., to Timex Corporation. Clasp for adjustable watch band. 4,280,257, Cl. 24-206.00R.
Kotas, Antoni: *See*—
Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, 4,281,074, Cl. 525-40.000.
Kotyza, Heinrich: *See*—
Schmid, Leo; and Kotyza, Heinrich, 4,280,572, Cl. 175-417.000.
Kouyama, Mikihiro; and Funabashi, Katsunori, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle frame arrangement in motorized two-wheeled vehicle. 4,280,582, Cl. 180-219.000.
Kovalenko, Eugene N.; and Bowen, John G. Stationary display member for a rotating hub cap. 4,280,293, Cl. 40-587.000.
Kovats, Leslie P.: *See*—
Hunt, Walter G.; Kovats, Leslie P.; and Bovier, Edward M., 4,281,111, Cl. 536-111.000.
Kowal, Emil D. Inserts for fluid-type mattresses. 4,280,235, Cl. 5-458.000.
Kozhevnikov, Vladimir S.: *See*—
Mamatov, Juldash; Akhmadaliev, Makhammadzhon; and Kozhevnikov, Vladimir S., 4,281,114, Cl. 542-432.000.
Kraft, Thomas L.; Vick, Howard A.; and Hossom, Miles G., to American Home Products Corp. Automatic chemical analysis apparatus and method. 4,281,387, Cl. 364-497.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Hoffmann, Jurgen, 4,280,871, Cl. 176-38.000.
Kunstle, Konrad; Reiter, Kurt; and Koch, Christian, 4,280,449, Cl. 122-4.00R.
Puthawala, Anwer; Meichsner, Othmar; and Marr, Erich, 4,280,922, Cl. 252-301.10W.
Werres, Lothar, 4,280,875, Cl. 176-87.000.
Krag, Jens: *See*—
Hauberg, Georg H. H.; Krag, Jens; and Pisecky, Jan, 4,281,024, Cl. 426-471.000.
Kratzer, Reinhold H.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Ito, Thomas I.; and Nakahara, James H., 4,281,185, Cl. 564-13.000.
Kreim, Karl: *See*—
Wiesenberger, Alfred; Mager, Lutz; Kolb, Erich; and Kreim, Karl, 4,280,634, Cl. 220-270.000.
Kren, George J.: *See*—
Wheeler, William R.; and Kren, George J., 4,280,354, Cl. 73-1.0DV.
Kronenberg, Stanley; Siebentritt, Carl R.; and Van Gorden, Harry, to United States of America, Army. Radiation dose rate meter. 4,281,250, Cl. 250-377.000.
Kropac, Vaclav: *See*—
Koerner, Gotz; Kropac, Vaclav; and Rau, Harald, 4,281,147, Cl. 556-459.000.
Kroplinski, Thaddeus F.: *See*—
Brauer, Melvin; and Kroplinski, Thaddeus F., 4,281,210, Cl. 174-23.00C.
Krude, Werner, to Uni-Cardan AG. Telescopic drive shaft. 4,280,341, Cl. 64-23.000.
Krugener, Rolf: *See*—
Grabner, Christian; Reinhard, Theodor; Krugener, Rolf; and Kurth, Hermann W., 4,280,349, Cl. 70-358.000.
Kruka, Vitold R.; and Ruth, Charles W., to Shell Oil Company. Marine cable decoupler. 4,281,402, Cl. 367-15.000.
Kruzel, Thomas F.: *See*—
Comer, Robert C.; and Kruzel, Thomas F., 4,280,276, Cl. 30-144.000.
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission for use in motor vehicle. 4,280,374, Cl. 74-695.000.
Kubota, Masayoshi: *See*—
Sawa, Toshio; Kubota, Masayoshi; Takahashi, Sankichi; and Kaneko, Toyohiko, 4,280,886, Cl. 204-149.000.
Kubota, Norikazu: *See*—
Yoshii, Kazuhiro; and Kubota, Norikazu, 4,280,331, Cl. 62-148.000.
Kugler, Artur: *See*—
Zaunberger, Franz X.; and Kugler, Artur, 4,280,579, Cl. 180-6.440.
Kuhle, Engelbert: *See*—
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,281,011, Cl. 424-277.000.
Kulesza, Ralph J.; Disko, Harry; and Thibault, James G., to Marvin Glass & Associates. Toy vehicle. 4,280,300, Cl. 46-204.000.
Kulzer, Walter P. B. Toy model flying machine. 4,280,298, Cl. 46-78.000.
Kunstle, Konrad; Reiter, Kurt; and Koch, Christian, to Kraftwerk Union Aktiengesellschaft. Steam generator for a solar power plant. 4,280,449, Cl. 122-4.00R.
Kunz, Peter, to Mettler Instrumente AG. Temperature-protected weighing apparatus with bearing enclosure. 4,280,577, Cl. 177-179.000.
Kunze, Dieter, to Siemens Aktiengesellschaft. Cable sleeve having a closable, longitudinal slit. 4,280,258, Cl. 24-257.000.
Kuramochi, Koujiro: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,280,374, Cl. 74-695.000.
Kuroiwa, Hiroshi; and Oyama, Yoshishige, to Hitachi, Ltd. Electronically controlled carburetor for internal combustion engine. 4,280,462, Cl. 123-437.000.
Kuroiwa, Katsumasa: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,281,181, Cl. 562-453.000.

Kuroki, Junsuke: *See*—
Katayose, Shinji; Sasabe, Yukiyoshi; Yokota, Yoshiaki; Kuroki, Junsuke; and Torii, Shuuji, 4,280,411, Cl. 104-112.000.

Kurosu, Yasuhisa; Kawada, Hiroshi; Kanasugi, Haruki; and Kashima, Akiko, to Hodogaya Chemicals Co., Ltd. Nematocidal composition. 4,281,016, Cl. 424-300.000.

Kurth, Hermann W.: *See*—
Grabner, Christian; Reinhard, Theodor; Krugener, Rolf; and Kurth, Hermann W., 4,280,349, Cl. 70-358.000.

Kurtz, Rudiger: *See*—
Bubik, Alfred; Kurtz, Rudiger; and Kutzelmann, Hermann, 4,280,870, Cl. 162-336.000.

Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, to Chemische Fabrik Stockhausen & Cie. Acrylyl and methacrylyl ureas containing quaternary groups, process for their preparation and their use in the preparation of polymers. 4,281,186, Cl. 564-46.000.

Kusters, Eduard: *See*—
Ahrweiler, Karl-Heinz, 4,280,262, Cl. 29-116.0AD.

Kusuhara, Akinobu: *See*—
Ugaji, Masana; Suyama, Hideo; Sakurai, Sadaaki; Yamaoka, Shigenori; Endo, Toshinaga; and Kusuhara, Akinobu, 4,281,223, Cl. 179-115.00R.

Kutzelmann, Hermann: *See*—
Bubik, Alfred; Kurtz, Rudiger; and Kutzelmann, Hermann, 4,280,870, Cl. 162-336.000.

Kuwano, Yukinori; Imai, Terutoyo; and Umetani, Masakazu, to Sanyo Electric Co., Ltd. Photovoltaic device and method of manufacturing thereof. 4,281,208, Cl. 136-249.000.

Kvall, Emil J.: *See*—
Berg, Richard C.; and Kvall, Emil J., 4,280,491, Cl. 128-201.240.

Kvita, Vratislav: *See*—
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,280,946, Cl. 260-326.00N.

Kyoei Steel Ltd.: *See*—
Maeda, Yukimasa, 4,280,836, Cl. 75-12.000.

Kyoraku Co., Ltd.: *See*—
Sumi, Takehiko; Oshige, Yoshinobu; Koike, Yoshio; and Matsumoto, Kazuya, 4,281,045, Cl. 428-516.000.

Kyushima, Tatsuo: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,280,374, Cl. 74-695.000.

L. & C. Steinmuller GmbH: *See*—
Thomas, Gerhard; and Jung, Richard, 4,280,877, Cl. 202-91.000.

Laabs, John E.: *See*—
DeMesa, Nicanor P., III; and Laabs, John E., 4,281,380, Cl. 364-200.000.

LaBuda, Edward F.; and Wang, Ting M., to Borg-Warner Corporation. Self-contained Belleville spring-type wet clutch. 4,280,608, Cl. 192-113.00B.

Ladisch, Christine M.: *See*—
Tsao, George T.; Ladisch, Michael R.; Ladisch, Christine M.; and Hsu, Teh-An, 4,281,063, Cl. 435-99.000.

Ladisch, Michael R.: *See*—
Tsao, George T.; Ladisch, Michael R.; Ladisch, Christine M.; and Hsu, Teh-An, 4,281,063, Cl. 435-99.000.

LaFleur, Ruby S. Disposable training panties. 4,280,230, Cl. 2-408.000.

Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., to Massachusetts Institute of Technology. Cryogenically controlled direct fluorination process, apparatus and products resulting therefrom. 4,281,119, Cl. 544-106.000.

LaHaye, John: *See*—
Leanna, Dale D.; Jorgensen, Allen R.; Terp, Gerald W.; LaHaye, John; and Nehring, Kenneth L., 4,280,669, Cl. 242-56.00A.

Lai Chen, Sow-Mei: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Lai Chen, Sow-Mei, 4,281,153, Cl. 560-118.000.

Laigneau, Richard: *See*—
Giraud, Jean; and Laigneau, Richard, 4,280,393, Cl. 89-36.00H.

Lakdawala, Ness R. Water condensate recovery device. 4,280,334, Cl. 62-277.000.

Lakey, Leroy E., to General Motors Corporation. Dual secondary cell charging system. 4,281,277, Cl. 320-6.000.

Lakshmanan, Pallavoor R.: *See*—
Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,281,152, Cl. 560-52.000.

LaMarche, Robert E.: *See*—
Chuang, Chin-Sheng; and LaMarche, Robert E., 4,281,218, Cl. 179-1.0SC.

Lamare, Jean-Claude; and Maury, Christian, to Compagnie Internationale pour l'Informatique-CII Honeywell Bull. Arrangement for detecting the binary values of bit cells having center transitions subject to phase distortion. 4,281,291, Cl. 329-50.000.

Lambicco, Rocco. Servo-arrangement with an electric gear shift disposition for the hand, respectively automatic control of a gear change, by elimination of the clutch pedal. 4,280,604, Cl. 192-0.080.

Lampert, Seymour R., to Sarns, Inc. Air emboli detection. 4,280,495, Cl. 128-214.00E.

Lang, Egon; and Nachtigall, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Screw-type extruder for polyvinylidene fluoride filaments. 4,280,802, Cl. 425-208.000.

Langdon, William K., to BASF Wyandotte Corporation. Polyalkylene polyamine ether derivatives of polyoxyalkylene compounds. 4,281,199, Cl. 564-475.000.

Lapidus, Stanley N., to Machlett Laboratories, Incorporated, The. Stepped scanner imaging system. 4,281,249, Cl. 250-363.00S.

Larson, Ivar W.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.

Lassmann, Eberhard; and Benkmann, Christian, to Linde Aktiengesellschaft. Process for providing a feed gas for a chemical reaction and for the separation of a gaseous reaction product. 4,280,824, Cl. 55-26.000.

Latham, Phillip B. Tracheostomy tube. 4,280,492, Cl. 128-207.150.

Laughlin, William C.: *See*—
Tolley, William K.; and Laughlin, William C., 4,280,839, Cl. 75-82.000.

Laurencin, Andre: *See*—
Daniel, Edmond; Guesnon, Jean; and Laurencin, Andre, 4,280,719, Cl. 285-90.000.

Laurenz, Frank R., to Agricultural Research & Development Inc. Animal facility equipment. 4,280,447, Cl. 119-28.000.

Lavielle, Solange: *See*—
Guillemin, Roger C. L.; Lavielle, Solange; Brazeau, Paul E., Jr.; Ling, Nicholas C.; and Benoit, Robert A., 4,280,953, Cl. 260-112.50S.

Lawrence, Andrew M.: *See*—
Budzich, Mieczyslaw; Fitz, Forest G., Jr.; and Lawrence, Andrew M., 4,280,901, Cl. 209-154.000.

LBF Properties, Inc.: *See*—
Bruhn, Larry C., 4,280,713, Cl. 280-415.00A.

Leach Industries: *See*—
Drake, Charles A., 4,280,699, Cl. 273-73.00C.

Leanna, Dale D.; Jorgensen, Allen R.; Terp, Gerald W.; LaHaye, John; and Nehring, Kenneth L., to Magna-Graphics Corporation. Automatic web rewinder for tensioned web. 4,280,669, Cl. 242-56.00A.

Leas, Arnold M. Integrated coal conversion process. 4,280,893, Cl. 208-10.000.

LeBlanc, John R.: *See*—
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, 4,280,938, Cl. 260-21.000.
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, 4,281,091, Cl. 525-518.000.

Lebrun, Jean-Louis, to Societe Francaise d'Equipements pour la Navigatior Aerienne (S.F.E.N.A.). Process and system for the rapid detection of a wind gradient. 4,281,383, Cl. 364-428.000.

Ledley, Robert S. Microfocus X-ray tube. 4,281,269, Cl. 313-60.000.

Lee, Fred S., to Magnex Corporation. Thin film magnetic head and method of making the same. 4,281,357, Cl. 360-125.000.

Leeds & Northrup Company: *See*—
Connery, James G.; DiNapoli, Louis D.; and Punis, Giancarlo, 4,280,365, Cl. 73-861.250.

Leesona Corporation: *See*—
Batting, Robert D.; Chabot, Donald G.; and Poland, Donald R., 4,280,626, Cl. 209-658.000.

LeFever, Randall H.; Harvey, William J.; and Flook, Glen E., Jr., to GTE Products Corporation. Multilamp photoflash unit construction. 4,281,364, Cl. 362-10.000.

Legorreta, Gildardo S. Method and apparatus for controlling, orienting and analyzing biological cells in liquid suspension. 4,280,623. Cl. 209-3.100.

Lehment, Klaus-Friedrich; Raue, Roderich; and Gleinig, Harald, to Bayer Aktiengesellschaft. Process for the preparation of cationic dyestuffs. 4,281,112, Cl. 542-417.000.

Lehnert, Gunther: *See*—
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; Lehnert, Gunther; and Lindner, Christian, 4,281,101, Cl. 528-196.000.

Leithauser, Horst; Osterhoff, Heinz; and Trukenbrod, Karl, to Chemische Werke Huls AG. Method for coating fine particulate expandable styrene polymers. 4,281,036, Cl. 427-222.000.

Leland Stanford Junior University: *See*—
Huang, Alan, 4,281,391, Cl. 364-746.000.

LeMahieu, Ronald A.; and Nason, William C., to Hoffmann-La Roche Inc. Trans-3-(4-oxo-4H-quinazolin-3-yl)-2-propenoic acid derivatives. 4,281,127, Cl. 544-287.000.

Lemaitre, Gerard. Dispenser for granular or powdered product with crenellated dispensing blade. 4,280,639, Cl. 222-217.000.

Leopold Kostal, Firma: *See*—
Berginski, Werner, 4,281,226, Cl. 200-44.000.

Leuchtmann, Guenter: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,280,260, Cl. 28-255.000.

Lever Brothers Company: *See*—
Garvey, Michael J.; and Griffiths, Ian C., 4,280,920, Cl. 252-173.000.

LeVert, Francis E. Manual automobile pusher. 4,280,684, Cl. 254-35.000.

Levine, Abraham I. Ski sharpener. 4,280,378, Cl. 76-83.000.

Levitt, Charlie M.: *See*—
Grobbelaar, Jacobus H.; Colson, Richard N.; Levitt, Charlie M.; and Chatterley, Samuel, 4,280,625, Cl. 209-582.000.

Lewalter, Jurgen: *See*—
Dunwald, Willi; Lewalter, Jurgen; Merten, Rudolf; Rottmaier, Ludwig; Schulte, Bernhard; and Meyer, Karl-Heinrich, 4,281,095, Cl. 528-49.000.

Lewis, Duane H., to Continental Plastics, Inc. Container cover locking assembly. 4,280,636, Cl. 220-307.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Sommer, Karlheinz; and Sonntag, Alois, 4,281,336, Cl. 357-38.000.

Liebherr-Werk Ehingen GmbH: *See*—
Becker, Rudolf, 4,280,627, Cl. 212-198.000.

Liljegren, Lennart, to AB Asea-Atom. Filter for separating solid contaminants from a fluid, especially solid contaminants in a reactor cooling water used in nuclear reactor plants. 4,280,906, Cl. 210-282.000.

Lilly Industries Limited: *See*—
Williamson, William R. N., 4,281,017, Cl. 424-308.000.

Lin, Cheng-I; and Singh, Prithipal, to Syva Company. Phencyclidine conjugates to antigenic proteins and enzymes. 4,281,065, Cl. 435-188.000.

Lindblom, Curtis H.; and Shriver, Joe E., to Sperry Corporation. Adjustable coupling apparatus. 4,280,317, Cl. 56-15.600.

Linde Aktiengesellschaft: *See*—
Lassmann, Eberhard; and Benkmann, Christian, 4,280,824, Cl. 55-26.000.

Lindner, Christian: *See*—
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; Lehnert, Gunther; and Lindner, Christian, 4,281,101, Cl. 528-196.000.

Lindstrom, Fred B., to Aktiebolaget IRO. Thread-storage and delivery device for textile machines. 4,280,668, Cl. 242-47.120.

Ling, Nicholas C.: *See*—
Guillemin, Roger C. L.; Lavielle, Solange; Brazeau, Paul E., Jr.; Ling, Nicholas C.; and Benoit, Robert A., 4,280,953, Cl. 260-112.50S.

List, Hans; Skatsche, Othmar; and Greier, Josef, to List, Hans. Multicylinder internal combustion engine. 4,280,453, Cl. 123-195.00R.

Litovich, Michael: *See*—
Hoeving, Philip; and Litovich, Michael, 4,280,295, Cl. 43-19.200.

Litton Resources Systems, Inc.: *See*—
Siems, Lee E.; and Porter, James A., 4,281,403, Cl. 367-76.000.

Litton Systems, Inc.: *See*—
Buck, Ronald G., 4,281,022, Cl. 426-233.000.

Liu, Ke-Tien: *See*—
Chauhan, Satya P.; Feldmann, Herman F.; Stambaugh, Edgel P.; and Liu, Ke-Tien, 4,280,817, Cl. 44-1.00R.

Lobbe, Armin, to Gewerkschaft Eisenhutte Westfalia. Non-rotary mining cutter with recessed nozzle insert. 4,280,735, Cl. 299-81.000.

Lockard, Donald F., to Johns-Manville Corporation. Method and apparatus for fastening a sheet of material to a support. 4,280,311, Cl. 52-748.000.

Logsdon, Duane D., to Logsdon Foundation, The. Roof flashings for use with solar collector. 4,280,305, Cl. 52-58.000.

Logsdon Foundation, The: *See*—
Logsdon, Duane D., 4,280,305, Cl. 52-58.000.

Lohr, Delmar F., Jr., to Firestone Tire & Rubber Company, The. Polymerization catalyst and process for polymerizing dienes therewith. 4,280,927, Cl. 252-431.00N.

Lohrman, Richard D., to Owens-Illinois, Inc. Safety closure and container with snap cap liner. 4,280,631, Cl. 215-204.000.

Lombardi, Frank: *See*—
United States of America, National Aeronautics and Space Administration; and Lombardi, Frank, 4,280,689, Cl. 269-21.000.

Lomenech, Herve; and Sarrailh, Jean-Paul, to Societe Nationale Elf Aquitaine (Production). Horizontally developing multi-functions rotating connection. 4,280,720, Cl. 285-136.000.

Longenecker, John G., to Gonzalez Barrera, Roberto. Method for shaping and precooking tortilla dough. 4,281,025, Cl. 426-496.000.

Longworth, Archibald L. Fume cupboards. 4,280,400, Cl. 98-115.0LH.

Lonseal Corporation: *See*—
Miura, Nobuo; and Akiba, Yuichi, 4,281,039, Cl. 428-159.000.

Loomis, Donald W. One piece anchor for adjustably tethering a rope suspended boat fender. 4,280,435, Cl. 114-219.000.

Loran, Muriel R., to Pharmaceutical Associates, Inc. Oral suspension of phenytoin. 4,280,995, Cl. 424-180.000.

Lord, John; and Gellert, Jobst U., to Mold-Masters Limited. Injection molding filter assembly. 4,280,908, Cl. 210-446.000.

L'Oreal: *See*—
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,281,192, Cl. 564-207.000.

Loschilin, Evgeny D.: *See*—
Onikov, Eduard A.; Galperin, Alexandr L.; Serebryannikov, Albert S.; Zabotin, Alexandr A.; and Loschilin, Evgeny D., 4,280,537, Cl. 139-436.000.

Lou, Perry W.; Ponder, James E.; and Tubbs, Graham S., to Texas Instruments Incorporated. Three level interconnect process for manufacture of integrated circuit devices. 4,280,271, Cl. 29-571.000.

Louisiana State University Board of Supervisors: *See*—
Steelman, Carrol D.; Chambers, Doyle M.; and Andis, Michael D., 4,280,999, Cl. 424-251.000.

Lovasz nee Gaspar, Marianna: *See*—
Szekely, Istvan; and Lovasz nee Gaspar, Marianna, 4,281,170, Cl. 560-124.000.

Lowe, Jerry B. Card drive operating apparatus and method. 4,280,249, Cl. 19-98.000.

Loyer, Alain: *See*—
Allen, John R.; Desrochers, Louis-Georges; and Loyer, Alain, 4,280,407, Cl. 102-320.000.

Lucas Industries Limited: *See*—
Baum, Heinz W., 4,280,594, Cl. 188-1.00A.
Evans, Kenneth S., 4,281,377, Cl. 363-63.000.
Skinner, Robert T. J., 4,280,454, Cl. 123-195.00A.

Ludwig, Guy, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Feed chimney for a textile machine supplied with textile fiber tufts. 4,280,251, Cl. 19-105.000.

Lugovnev, Fedor T.: *See*—
Gimelfarb, Natan M.; Lugovnev, Fedor T.; and Misjura, Nikolai E., 4,280,345, Cl. 69-32.000.

Lundberg, Lennart A.: *See*—
Guthrie, Elmer F.; and Lundberg, Lennart A., 4,280,284, Cl. 34-60.000.

Lupertz, Hans-Henning; and Riedel, Peter, to ITT Industries, Inc. Tandem master cylinder. 4,280,738, Cl. 303-6.00C.

Lyerly, William M.: *See*—
Bivens, Joseph R.; Lyerly, William M.; and Simmons, Walter J., 4,280,943, Cl. 260-29.20E.

Lynch, Denis A., Jr.: *See*—
Bechard, Conrad E.; Davenport, John M.; and Lynch, Denis A., Jr., 4,281,274, Cl. 315-49.000.

Mabille, Pierre, to Societe SATELEC. High frequency voltage generator. 4,281,373, Cl. 363-21.000.

MacGregor, David C. Endocardial pacemaker electrode. 4,280,514, Cl. 128-786.000.

Machine Technology, Inc.: *See*—
Hillman, Gary; and Devico, Michael J., 4,281,031, Cl. 427-45.100.

Machines Chambon: *See*—
Corse, Louis G., 4,280,406, Cl. 101-177.000.

Machlett Laboratories, Incorporated, The: *See*—
Lapidus, Stanley N., 4,281,249, Cl. 250-363 00S.

Mack Trucks, Inc.: *See*—
Stieg, Robert W., 4,280,583, Cl. 180-250.000.

Mackay, Robin, to Garrett Corporation, The. Solar powered turbine system. 4,280,327, Cl. 60-641.0AC.

Macurdy, William B.; and Thompson, Albert E., Jr., to PPG Industries, Inc. Device for and method of measuring glazing rabbet loads. 4,280,364, Cl. 73-818.000.

Maeda, Hiroaki: *See*—
Iizuka, Chiyokichi; and Maeda, Hiroaki, 4,281,021, Cl. 426-61.000.

Maeda, Yukimasa, to Kyoei Steel Ltd. Method of preheating iron scraps in steel-making by the electric arc furnace. 4,280,836, Cl. 75-12.000.

Maender, Otto W., to Monsanto Company. Alkylthioimidazolidinetriones. 4,281,139, Cl. 548-307.000.

Maerfeld, Charles; and Gautier, Herve, to Thomson-CSF. Acoustoelectric device for reading or processing a two-dimensional optical image. 4,281,350, Cl. 358-213.000.

Mager, Lutz: *See*—
Wiesenberger, Alfred; Mager, Lutz; Kolb, Erich; and Kreim, Karl, 4,280,634, Cl. 220-270.000.

Maggiulli, Cataldo A.: *See*—
Hyatt, John A.; French, Stephen E.; and Maggiulli, Cataldo A., 4,281,143, Cl. 548-360.000.

Magna-Graphics Corporation: *See*—
Leanna, Dale D.; Jorgensen, Allen R.; Terp, Gerald W.; LaHaye, John; and Nehring, Kenneth L., 4,280,669, Cl. 242-56.00A.

Magnaflux Corporation: *See*—
Mlot-Fijalkowski, Adolf, 4,281,033, Cl. 427-157.000.

Magnex Corporation: *See*—
Lee, Fred S., 4,281,357, Cl. 360-125.000.

Mahieu, Claude: *See*—
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,281,192, Cl. 564-207.000.

Mahle, Christoph E.: *See*—
Childs, William H.; and Mahle, Christoph E., 4,281,293, Cl. 329-105.000.

Mahoney, Paul F.: *See*—
Bonn, Jerrold L.; Mahoney, Paul F.; and Monsen, Peter, 4,281,411, Cl. 375-14.000.

Mahurin, Ballard T.: *See*—
Dean, Homer B.; and Mahurin, Ballard T., 4,280,263, Cl. 29-132.000.

Majcher, John P.: *See*—
Rexroad, James O.; and Majcher, John P., 4,281,227, Cl. 200-50.0AA.

Makino, Tomoatsu: *See*—
Okuda, Ryoichi; Makino, Tomoatsu; and Miwa, Katsuteru, 4,280,461, Cl. 123-418.000.

Makishima, Yoshihiro, to NSK-Warner K.K. Emergency locking retractor. 4,280,584, Cl. 180-268.000.

Makley, James A.: *See*—
Hamisch, Paul H., Jr; Karn, Donald L.; and Makley, James A., 4,280,863, Cl. 156-387.000.

Malhotra, Sudarshan K.; and Ricks, Michael J., to Dow Chemical Company, The. Substituted phenoxy and phenylthio picolinaldehydes. 4,281,133, Cl. 546-298.000.

Maloney-Crawford Corporation: *See*—
Hodgson, Robert A., 4,280,867, Cl. 159-47.00R.

Mamatov, Juldash; Akhmadaliev, Makhammadzhon; and Kozhevnikov, Vladimir S. Method for preparing difurfurylideneacetone oligomer. 4,281,114, Cl. 542-432.000.

Mancosu, Federico, to Industrie Pirelli S.p.A. Solar roofs. 4,280,484, Cl. 126-450.000.

Mannion, Robert S., to Continental Instruments Corporation. Balancing apparatus for magnetic circuits employed in data storage and retrieval systems. 4,281,242, Cl. 235-449.000.

Manowitz, Milton: *See*—
Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, 4,281,136, Cl. 548-206.000.

Maraschin, Norma J.: *See*—
Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., 4,281,119, Cl. 544-106.000.

Marathon Oil Company: *See*—
Sydansk, R. D., 4,280,560, Cl. 166-305.00R.

Marchal, Paul: *See*—
Corfa, Yves-Paul; Marchal, Paul; Roussel, Victor; and Vertut, Jean, 4,280,288, Cl. 37-54.000.

Marconi Company Limited, The: *See*—
Byatt, Dennis W. G., 4,281,341, Cl. 358-92.000.

Marek, Donald C.: *See*—
Allshouse, Roger S.; and Marek, Donald C., 4,280,414, Cl. 109-49.500.

Maresca, Louis M., to Union Carbide Corporation. Process for stabilizing polyarylates with an aromatic phenol. 4,281,099, Cl. 528-176.000.

Margolies, Arthur: *See*—
Fox, Jeffrey R.; Margolies, Arthur; Moolenbeek, Rob; and Resnick, Martin L., 4,281,394, Cl. 364-900.000.

Marini, Thomas O., to Suntemp Industries, Inc. Method of securing an article to the edge of a panel. 4,280,269, Cl. 29-526.00R.

Marjollet, Jacques; Tondeur, Gerard; Cerdan, Jean-Pierre; and Talleu, Patrick, to Stein Industrie; and Electricite de France. Vertical separator for separating liquid or solid particles from a vapor or a gas. 4,280,825, Cl. 55-203.000.

Markem Corporation: *See*—
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,334, Cl. 346-153.100.
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,335, Cl. 346-153.100.

Markert, Gerhard: *See*—
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,281,081, Cl. 525-281.000.

Marklund, Erland: *See*—
Hellgren, Hans; and Marklund, Erland, 4,280,382, Cl. 83-106.000.

Marr, Erich: *See*—
Puthawala, Anwer; Meichsner, Othmar; and Marr, Erich, 4,280,922, Cl. 252-301.10W.

Marston, Glendon P.: *See*—
Gitelman, Ephraim; Marston, Glendon P.; and Bird, Peter A., 4,281,393, Cl. 364-900.000.

Martech International, Inc.: *See*—
Bassompierre-Sewrin, Christian C., 4,280,289, Cl. 37-63.000.

Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, to Roussel UCLAF. Novel lactones of cis 2,2-dimethyl-cyclopropane-1-carboxylic acid and their use. 4,281,182, Cl. 562-506.000.

Martin, Graham, to Platt Saco Lowell Limited. Textile carding machine frame construction. 4,280,250, Cl. 19-98.000.

Martin, Guy E.: *See*—
Dameron, H. Clifford, Jr.; Brouwer, Nicholaas L.; and Martin, Guy E., 4,280,857, Cl. 148-156.000.

Martin, Robert: *See*—
Ferrari, Luciano; Fourest, Bernard; Kayser, Gaston; and Martin, Robert, 4,280,872, Cl. 176-38.000.

Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, to BASF Aktiengesellschaft. Apparatus for threading up a texturizing nozzle. 4,280,260, Cl. 28-255.000.

Martinelli, Rene J., to Burns Bros. Wire rope traction device for tires. 4,280,545, Cl. 152-222.000.

Martinet, Robert L.: *See*—
Wissel, Frank A.; Smith, Donald E.; Martinet, Robert L.; Dapper, Mark J.; and Kiliman, Douglas A., 4,281,412, Cl. 375-86.000.

Marukawa, Katsukiyo; Yamazaki, Isao; Anezaki, Syoji; and Kajimoto, Tsutomu, to Sumitomo Metal Industries, Ltd. Production of carbon steel and low-alloy steel with bottom blowing basic oxygen furnace. 4,280,838, Cl. 75-60.000.

Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Air-fuel mixture ratio control using electrostatic force. 4,280,467, Cl. 123-536.000.

Maruyama, Noboru. Liquid heating apparatus. 4,280,450, Cl. 122-17.000.

Maruyama, Yutaka; Goto, Kazuhiro; and Terazawa, Michio, to Yoshitomi Pharmaceutical Industries, Ltd. Method for treatment of rheumatism. 4,281,001, Cl. 424-256.000.

Marvin Glass & Associates: *See*—
Katzman, Allison W.; Disko, Harry; and Jaworski, Eugene, 4,280,297, Cl. 46-41.000.
Kulesza, Ralph J.; Disko, Harry; and Thibault, James G., 4,280,300, Cl. 46-204.000.

Marzoli, Angelo, to F.lli Marzoli & C. S.p.A. Safety spindle-stopping device for a spinning frame. 4,280,321, Cl. 57-81.000.

Masaki, Kenji, to Nissan Motor Company, Limited. Control system for internal combustion engine. 4,280,471, Cl. 123-571.000.

Maschinenfabrik Rissen GmbH: *See*—
Schmidt, Werner, 4,280,652, Cl. 229-43.000.

Masenheimer, John H.; and Bradley, Irving, to General Electric Company. Swivel base lighting fixture. 4,281,370, Cl. 362-287.000.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,281,082, Cl. 525-296.000.

Massachusetts Institute of Technology: *See*—
Knudson, Donald R., 4,281,312, Cl. 340-146.3MA.
Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., 4,281,119, Cl. 544-106.000.
Yannas, Ioannis V.; Gordon, Philip L.; Huang, Chor; Silver, Frederick H.; and Burke, John F., 4,280,954, Cl. 260-123.700.

Massimei, Gerald G.; and Massimei, Gerald G., Jr. Method for playing a military warfare board game. 4,280,704, Cl. 273-258.000.

Massimei, Gerald G., Jr.: *See*—
Massimei, Gerald G.; and Massimei, Gerald G., Jr., 4,280,704, Cl. 273-258.000.

Masters, Gilbert M.: *See*—
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,280,478, Cl. 126-420.000.

Matsuhisa, Koh; Takezawa, Mamoru; and Kawajiri, Yoshio, to Ricoh Co., Ltd. Sheet feeding device for printing apparatus. 4,280,693, Cl. 271-246.000.

Matsuhisa, Tadaaki; and Soejima, Shigeo, to NGK Insulators, Ltd. Cordierite ceramic. 4,280,845, Cl. 106-62.000.

Matsuki, Koji: *See*—
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Matsumoto, Kazuya: *See*—
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Matsumoto, Masanori: *See*—
Moriguchi, Hiroyuki; Haneda, Satoshi; Kaneko, Tadashi; Itoh, Akira; Shimura, Takeo; Matsumoto, Masanori; and Nomori, Hiroyuki, 4,281,055, Cl. 430-60.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ogino, Yoshio; Mizukawa, Takumi; and Yoshida, Hirokazu, 4,281,378, Cl. 363-96.000.
Shizuya, Osamu, 4,281,348, Cl. 358-188.000.
Wada, Ryoichi; Tsuchiya, Mitsuharu; Odagi, Kanji; and Senoo, Takanori, 4,281,355, Cl. 360-32.000.

Matsushita Electric Works, Ltd.: *See*—
Ihara, Sinji, 4,280,517, Cl. 132-9.000.

Matula, Jerry: *See*—
Barrus, Gordon B.; and Matula, Jerry, 4,280,404, Cl. 101-93.030.

Maury, Christian: *See*—
Lamare, Jean-Claude; and Maury, Christian, 4,281,291, Cl. 329-50.000.

May, John R., to Newport News Industrial Corporation. Immobilization of waste material. 4,280,921, Cl. 252-301.10W.

Maynes, Alan D. Two-sided portable scoreboard. 4,280,291, Cl. 40-495.000.

Mayr-Stein, Horst: *See*—
Agricola, Manfred; Dietze, Klaus; Mayr-Stein, Horst; Reimer, Karl-Heinz; Reinhold, Andreas; Schmid, Adolf; and Schosnig, Johannes-Georg, 4,281,410, Cl. 370-110.000.

Mazur, Stanislaw: *See*—
Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, 4,281,074, Cl. 525-40.000.

McAdams, Timothy E.: *See*—
Grants, Valdis; Schultz, Ron; and McAdams, Timothy E., 4,281,392, Cl. 364-900.000.

McCarty, Leslie P., to Dow Chemical Company, The. Deuterated analogues of methoxyflurane useful as an anesthetic. 4,281,020, Cl. 424-342.000.

McCoag, John, to Aardee Spring & Lock Company Limited. Keyless lockable security devices. 4,280,726, Cl. 292-327.000.

McCormick, Bryan H., to BP Chemicals Limited. Control of phenol-/aldehyde condensation reactions. 4,281,098, Cl. 528-139.000.

McDonnell Douglas Corporation: *See*—
Austin, Len S., 4,281,379, Cl. 364-102.000.

McHenney, John R.; and Knowles, Marlin A., to International Harvester Company. Fusible terminal. 4,280,748, Cl. 339-147.00R.

McKenny, Vernon G.; and Taylor, David L., to Mostek Corporation. Block redundancy for memory array. 4,281,398, Cl. 365-200.000.

McMahon, William H.: *See*—
Fraula, Louis F.; McMahon, William H.; and Heckman, Thomas B., 4,280,520, Cl. 134-60.000.

McNaboe, John A.: *See*—
Dannheim, Walter R.; and McNaboe, John A., 4,280,978, Cl. 264-156.000.

McNaney, Joseph T. Graphic symbol selection and recording apparatus. 4,280,755, Cl. 350-358.000.

McNeely, Gerald W., to Akzona Incorporated. Temperature indicator. 4,280,441, Cl. 116-219.000.

McPhee, William A.; and Speights, Junius L., to Dresser Industries, Inc. Sidewall sampling apparatus. 4,280,568, Cl. 175-4.000.

McVey, John K., to Illinois Tool Works Inc. Thermal switch with split ring construction. 4,281,308, Cl. 337-407.000.

Meacham, Craig L., to Rockwell International Corporation. Adjustable squeeze point safety device. 4,280,610, Cl. 192-132.000.

Meacham, G. B. Kirby. Log splitter. 4,280,540, Cl. 144-193.00C.

Meadows, Roger D.: *See*—
Guptil, Richard A.; Gaster, Ivan; and Meadows, Roger D., 4,280,722, Cl. 285-244.000.

Mecone, David W.; Hartman, Donald W.; and Armstrong, Donald E., to GTE Products Corporation. Multilamp photoflash unit with reflective-protective circuit board element. 4,281,363, Cl. 362-6.000.

Medtronic, Inc.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,281,382, Cl. 364-414.000.
O'Neill, Edward G., 4,280,510, Cl. 128-784.000.
O'Neill, Edward G., 4,280,511, Cl. 128-784.000.

Meichsner, Othmar: *See*—
Puthawala, Anwer; Meichsner, Othmar; and Marr, Erich, 4,280,922, Cl. 252-301.10W.

Melamed, Avraham: *See—*
Wirguin, Joseph M.; and Melamed, Avraham, 4,280,415, Cl. 110-224.000.
Mele, Cam. Apparatus for making a bow. 4,280,642, Cl. 223-46.000.
Mendorf, Donald R.: *See—*
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Merck & Co., Inc.: *See—*
Baldwin, John J., 4,281,005, Cl. 424-263.000.
Christensen, Burton G.; Guthikonda, Ravindra N.; Johnston, David B. R.; and Schmitt, Susan M., 4,281,002, Cl. 424-263.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Gunkel, Werner; and Eisenbeiss, Friedhelm, 4,280,905, Cl. 210-198.200.
Hubenett, Fritz, 4,280,966, Cl. 260-543.00R.
Merrick, John A. Elevating device. 4,280,589, Cl. 182-2.000.
Merritt, Leander; and Pioch, Richard P., to Eli Lilly and Company. 3-(Imidazol-4-yl)-2-phenylpropanenitriles. 4,281,141, Cl. 548-342.000.
Mersereau, J. Mark: *See—*
Walters, Linwood A.; and Mersereau, J. Mark, 4,281,044, Cl. 428-460.000.
Merten, Rudolf: *See—*
Dunwald, Willi; Lewalter, Jurgen; Merten, Rudolf; Rottmaier, Ludwig; Schulte, Bernhard; and Meyer, Karl-Heinrich, 4,281,095, Cl. 528-49.000.
Zecher, Wilfried; and Merten, Rudolf, 4,281,140, Cl. 548-313.000.
Messer Griesheim GmbH: *See—*
Munch, Gerhard, 4,280,687, Cl. 266-50.000.
Mettler Instrumente AG: *See—*
Kunz, Peter, 4,280,577, Cl. 177-179.000.
Meyer, Karl-Heinrich: *See—*
Dunwald, Willi; Lewalter, Jurgen; Merten, Rudolf; Rottmaier, Ludwig; Schulte, Bernhard; and Meyer, Karl-Heinrich, 4,281,095, Cl. 528-49.000.
Micaelli, Odile: *See—*
Gruffaz, Max; and Micaelli, Odile, 4,281,176, Cl. 560-247.000.
Michel, Joseph P., to Anciaux widow Vastesaeger, Martine, a part interest. Method of producing cross-linked, unsaturated polyesters. 4,281,073, Cl. 525-11.000.
Miesel, John L., to Eli Lilly and Company. 1-(2-6-Dihalobenzoyl)-3-(5-substituted-2-pyridinyl)urea insecticides and insecticidal method. 4,281,003, Cl. 424-263.000.
Mietzsch, Fritz: *See—*
Bartl, Herbert; and Mietzsch, Fritz, 4,280,937, Cl. 260-17.00A.
Mihirogi, Kiyoshi, to Japan Air Lines Co., Ltd. Independent suspension system for attraction type magnetically floated travelling body. 4,280,412, Cl. 104-281.000.
Milberger, Lionel J.; and Tucker, Albert R., to FMC Corporation. Method and apparatus for hydraulically controlling subsea well equipment. 4,280,531, Cl. 137-624.110.
Miles Laboratories, Inc.: *See—*
Johnson, Leighton C., 4,280,442, Cl. 118-52.000.
Milinic, Vojin. Convertible enclosure for buildings and areas. 4,280,306, Cl. 52-63.000.
Miller, Henry C.: *See—*
Buchholz, Bernard; Welsh, Charles B.; and Miller, Henry C., 4,281,202, Cl. 568-62.000.
Miller, Paul W.; and Fobes, Norman H., to Wean United, Inc. Gripper mechanism for tension reel mandrel and the like. 4,280,671, Cl. 242-78.300.
Miller, Richard L.: *See—*
Harris, Verdell; and Miller, Richard L., 4,280,330, Cl. 62-3.000.
Miller, Roy W., to Pullman Incorporated. Air brake arrangement for center sill-less hopper cars. 4,280,596, Cl. 188-52.000.
Millman, Mitchell W. Regenerative reciprocating open cycle internal combustion engine. 4,280,468, Cl. 123-546.000.
Min, Mart V.: *See—*
Pungas, Toom A.; Parve, Toomas E.; and Min, Mart V., 4,281,281, Cl. 323-271.000.
Minnesota Mining and Manufacturing Company: *See—*
Berg, Richard C.; and Kvall, Emil J., 4,280,491, Cl. 128-201.240.
Minolta Camera Kabushiki Kaisha: *See—*
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,280,763, Cl. 355-14.00R.
Murata, Tomoji; and Ito, Masazumi, 4,281,244, Cl. 250-225.000.
Mironenko, Vyacheslav G.: *See—*
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Mironenko, Vyacheslav G.; and Kamshitsky, Pavel V., 4,281,304, Cl. 335-72.000.
Mirviss, Stanley B.; and Giolito, Silvio L., to Stauffer Chemical Company. Vinyl chloride compositions plasticized with meta-tertiary-butylphenyl diphenyl phosphate. 4,280,945, Cl. 260-30.60R.
Misjura, Nikolai E.: *See—*
Gimelfarb, Natan M.; Lugovnev, Fedor T.; and Misjura, Nikolai E., 4,280,345, Cl. 69-32.000.
Mistretta, Victor S. Multi-annular chamber, tubeless safety tire. 4,280,546, Cl. 152-330.0RF.
Mitamura, Ichiro; Isono, Katsuo; and Hosono, Takashi, to Sony Corporation. Horizontal scanning rate correction apparatus for beam index color cathode-ray tube. 4,281,340, Cl. 358-67.000.
Mitchell, Richard F.: *See—*
Stevens, Richard; Mitchell, Richard F.; and White, Philip D., 4,281,301, Cl. 333-195.000.
Mitchell, Robert P., to Rowe International, Inc. Merchandising machine shelf supporting structure. 4,280,745, Cl. 312-323.000.
Mitchell, Tyrone D., to General Electric Company. Process for producing alkoxylated silanes. 4,281,145, Cl. 556-440.000.
Mitel Corporation: *See—*
Cowpland, Michael C. J.; and Beirne, Patrick R., 4,281,219, Cl. 179-18.0FA.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Yoshioka, Akiyoshi; Shibuya, Yoshikazu; and Nakanishi, Ioichiro, 4,281,209, Cl. 174-14.00R.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Komatsu, Makoto; and Tanaka, Toru, 4,281,179, Cl. 562-416.000.
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Mitsui-Nisso Corporation: *See—*
Saito, Takashi; Asai, Kiyotsugu; and Kawabata, Toshihiko, 4,280,944, Cl. 260-29.2TN.
Mitsui, Yoshiaki, to Mitsui Mfg. Co., Ltd. Apparatus for laminated core manufacture. 4,280,275, Cl. 29-732.000.
Miura, Nobuo; and Akiba, Yuichi, to Lonseal Corporation. Method for making a vinyl chloride resin sheet and sheet formed by said method. 4,281,039, Cl. 428-159.000.
Miwa, Katsuteru: *See—*
Okuda, Ryoichi; Makino, Tomoatsu; and Miwa, Katsuteru, 4,280,461, Cl. 123-418.000.
Miyakawa, Yoshitaka: *See—*
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Miyake, Osamu: *See—*
Nishida, Kouji; Miyake, Osamu; Kawai, Taneichi; and Hamajima, Shigemitsu, 4,280,420, Cl. 112-103.000.
Miyake, Tetsuya; Ogawa, Norito; Inada, Kohji; and Takeda, Kunihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Isotope separation. 4,280,984, Cl. 423-6.000.
Miyamoto, Yoshimi; and Tanigawa, Tetsuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition coil cover. 4,281,214, Cl. 174-138.00F.
Mizukawa, Takumi: *See—*
Ogino, Yoshio; Mizukawa, Takumi; and Yoshida, Hirokazu, 4,281,378, Cl. 363-96.000.
Mlot-Fijalkowski, Adolf, to Magnaflux Corporation. Fluorescent penetrant system. 4,281,033, Cl. 427-157.000.
Moalic, Jean J.: *See—*
Pophillat, Lucien J. P.; Moalic, Jean J.; and Sorel, Yvon J., 4,280,765, Cl. 356-73.100.
Mobil Oil Corporation: *See—*
Arbit, Harold A., 4,281,083, Cl. 525-305.000.
Yan, Tsoung-yuan, 4,280,985, Cl. 423-7.000.
Modern Mfg. Co., Inc.: *See—*
Stuck, Matthew A., 4,280,314, Cl. 53-241.000.
Moegen, Gerhard; and Wotruba, Gottfried, to Eurosil, GmbH. Controlled power supply for integrated circuits. 4,281,260, Cl. 307-573.000.
Mold-Masters Limited: *See—*
Lord, John; and Gellert, Jobst U., 4,280,908, Cl. 210-446.000.
Moldestad, Jon P. Safety device for hose connections. 4,280,723, Cl. 285-376.000.
Molins, Desmond W.; Hinchcliffe, Dennis; Heybourn, Frank; and Coyte, Raymond G., to Molins Limited. Cigarette conveyor systems. 4,280,611, Cl. 198-347.000.
Molins Limited: *See—*
Molins, Desmond W.; Hinchcliffe, Dennis; Heybourn, Frank; and Coyte, Raymond G., 4,280,611, Cl. 198-347.000.
Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., 4,280,862, Cl. 156-384.000.
Hamisch, Paul H., Jr; Karn, Donald L.; and Makley, James A., 4,280,863, Cl. 156-387.000.
Mono Pumps Limited: *See—*
Nelson, Hugh D., 4,280,793, Cl. 415-199.500.
Monsanto Company: *See—*
Baer, Massimo, 4,281,079, Cl. 525-152.000.
Balaban, Stephen M.; and Cox, Raymond C., 4,281,122, Cl. 544-190.000.
Beestman, George B.; and Deming, John M., 4,280,833, Cl. 71-100.000.
Dannheim, Walter R.; and McNaboe, John A., 4,280,978, Cl. 264-156.000.
Hirzy, J. William, 4,281,077, Cl. 525-129.000.
Maender, Otto W., 4,281,139, Cl. 548-307.000.
Shen, Hsiang-Sheng; Plischke, LeMoyne W.; Baggett, William M.; and Osborne, Franklin T., 4,280,860, Cl. 156-167.000.
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, 4,280,938, Cl. 260-21.000.
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, 4,281,091, Cl. 525-518.000.
Monsen, Peter: *See—*
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Montag, Jurgen: *See—*
Eisemann, Kurt; and Montag, Jurgen, 4,280,705, Cl. 369-233.000.
Montagna, John C.; Galli, Robert D.; and Freel, John, to Gulf Research & Development Company. Separating indene from unsaturated alkylaromatics. 4,280,881, Cl. 203-51.000.
Montealegre, James, to Champion International Corporation. Air freshener carton. 4,280,649, Cl. 229-11.000.

Montealegre, James; and Dutcher, Daniel P., to Champion International Corporation. Air freshener carton. 4,280,651, Cl. 229-20.000.

Monteiro, George. Underwater video camera housing. 4,281,343, Cl. 358-99.000.

Moodie, Keith, to Health and Safety Executive. Generators of impulses. 4,280,326, Cl. 60-547.00R.

Moog, Robert A., to Norlin Music, Inc. Frequency following circuit. 4,280,387, Cl. 84-1.010.

Mookherjee, Braja D.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,280,515, Cl. 131-276.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,280,933, Cl. 252-522.00R.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,281,177, Cl. 260-513.00R.

Moolenbeek, Rob: *See*—
Fox, Jeffrey R.; Margolies, Arthur; Moolenbeek, Rob; and Resnick, Martin L., 4,281,394, Cl. 364-900.000.

Moon, William T., Jr.: *See*—
Bible, Harley V.; and Moon, William T., Jr., 4,280,532, Cl. 137-882.000.

Moore, Dennis G.; and Johnson, Lawrence N. Submersible lamp wiring terminals. 4,281,367, Cl. 362-96.000.

Moore, Edward J. High compression vacuum cycle engine. 4,280,451, Cl. 123-90.600.

Moore, Paul O.: *See*—
Nametz, Richard C.; and Moore, Paul O., 4,280,952, Cl. 260-45.95G.

Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., to Markem Corporation. Electrostatic label printing system. 4,281,334, Cl. 346-153.100.

Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., to Markem Corporation. Electrostatic label printing system. 4,281,335, Cl. 346-153.100.

Moore, W. Michael. Diagonal elevator. 4,280,593, Cl. 187-12.000.

Moraw, Roland, to Hoechst Aktiengesellschaft. Color separation transparency and process for the preparation thereof. 4,281,049, Cl. 430-9.000.

Morawski, Janusz. Floor mat. 4,280,729, Cl. 296-1.00F.

Moretto, Hans-Heinrich: *See*—
de Montigny, Armand; and Moretto, Hans-Heinrich, 4,281,144, Cl. 556-416.000.

Mori, Tokishige. Paint containing silicone elastomer. 4,280,947, Cl. 260-33.6SB.

Moriguchi, Hiroyuki; Haneda, Satoshi; Kaneko, Tadashi; Itoh, Akira; Shimura, Takeo; Matsumoto, Masanori; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Photosensitive element with water soluble interlayer. 4,281,055, Cl. 430-60.000.

Morimoto, Kiyoshi: *See*—
Takagi, Toshinori; Morimoto, Kiyoshi; and Watanabe, Hiroshi, 4,281,029, Cl. 427-38.000.

Morishita, Masanobu; and Tanaka, Takanori, to Nippon Electric Co., Ltd. Color solid state image pick-up apparatus. 4,281,339, Cl. 358-52.000.

Morrow Electronics, Inc.: *See*—
Morrow, Ray E., Jr.; and Woodson, Richard W., 4,281,404, Cl. 367-108.000.

Morrow, Ray E., Jr.; and Woodson, Richard W., to Morrow Electronics, Inc. Depth finding apparatus. 4,281,404, Cl. 367-108.000.

Morrow, William D.: *See*—
Goss, John B.; and Morrow, William D., 4,280,628, Cl. 212-266.000.

Morton-Norwich Products, Inc.: *See*—
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Moskowitz, David; and Terner, Leslie L., to Ford Motor Company. Process for producing Si_3N_4 base articles by the cold press sinter method. 4,280,973, Cl. 264-63.000.

Mostek Corporation: *See*—
McKenny, Vernon G.; and Taylor, David L., 4,281,398, Cl. 365-200.000.

Motion Analysis Inc.: *See*—
Plagenhoef, Stanley, 4,280,700, Cl. 273-77.00A.

Motor Wheel Corporation: *See*—
Swan, Larry G., 4,280,426, Cl. 113-116.00D.

Motorola, Inc.: *See*—
Arvanitis, Aristotelis S., 4,281,300, Cl. 333-192.000.
Coon, Michael D.; Grace, Martin K.; and Smith, Steven R., 4,281,239, Cl. 235-92.0GA.
Hogg, Gerald J.; Newman, Robert A.; and Pfeifer, Robert F., 4,281,216, Cl. 178-22.080.
Pace, W. David, 4,281,317, Cl. 340-347.0NT.

Mount, Houston B., II, to Standard Oil Company (Indiana). Fluid flow restrictor valve for a drill hole coring tool. 4,280,569, Cl. 175-26.000.

Mounts, Frank W.; and Netravali, Arun N., to Bell Telephone Laboratories, Incorporated. Video interframe transform coding technique. 4,281,344, Cl. 358-136.000.

Mourick, Paul: *See*—
Munchow, Eberhard; Mourick, Paul; and Strop, Jurgen, 4,281,376, Cl. 363-50.000.

Mulach, Arthur: *See*—
Calfo, Raymond M.; Mulach, Arthur; and Jones, Warren W., 4,281,266, Cl. 310-256.000.

Muller, Frank: *See*—
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,280,359, Cl. 73-123.000.

Munch, Gerhard, to Messer Griesheim GmbH. Flame cutter. 4,280,687, Cl. 266-50.000.

Munchow, Eberhard; Mourick, Paul; and Strop, Jurgen, to Siemens Aktiengesellschaft. Protected converter arrangement. 4,281,376, Cl. 363-50.000.

Muntean, George L.: *See*—
Gaal, Stephen L.; Gant, Gary L.; Muntean, George L.; Reiners, Neville H.; and Shea, Michael H., 4,280,659, Cl. 239-124.000.

Munthe, Lene: *See*—
Vonsbaek, Ebbe; Hansen, Claus C.; and Munthe, Lene, 4,280,716, Cl. 280-642.000.

Murata, Tomoji; and Ito, Masazumi, to Minolta Camera Kabushiki Kaisha. Apparatus for detecting sheet-formed support material. 4,281,244, Cl. 250-225.000.

Murata, Tomoji: *See*—
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,280,763, Cl. 355-14.00R.

Murphy, Edward F.; and Portzer, James R., to Corning Glass Works. System for measuring optical waveguide fiber diameter. 4,280,827, Cl. 65-11.00W.

Murphy, James W. Pliers. 4,280,265, Cl. 29-229.000.

Murphy, Kelly J., to Ball Corporation. Machine with pneumatic stripping. 4,280,353, Cl. 72-345.000.

Murphy, Richard W. Vase cover. 4,280,635, Cl. 220-306.000.

Murray, Myles N., to Industrial Electronic Rubber Co. Sealing element. 4,280,390, Cl. 411-542.000.

Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Use of a mixture of isomers of caryophyllene alcohol or dihydro caryophyllene alcohol in augmenting or enhancing the aroma or taste of smoking tobacco, smoking tobacco articles and/or smoking tobacco flavors. 4,280,515, Cl. 131-276.000.

Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Derivatives of cis-3-hexenol and process for producing compositions of matter containing cis-3-hexenal and products produced thereby and organoleptic uses thereof. 4,280,933, Cl. 252-522.00R.

N. Schlumberger & Cie: *See*—
Herubel, Jean-Frederic, 4,280,248, Cl. 17-1.00B.

Nachtigall, Wilhelm: *See*—
Lang, Egon; and Nachtigall, Wilhelm, 4,280,802, Cl. 425-208.000.

NADA Electronics Limited: *See*—
Gurwicz, David, 4,281,279, Cl. 320-45.000.

Nagahara, Shusaku: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Sato, Kazuhiro; Umemoto, Masuo; Akiyama, Toshiyuki; and Izumita, Morishi, 4,281,338, Cl. 358-44.000.

Nagano, Toshihiro: *See*—
Yamaguchi, Hiroshi; Kaneko, Hiroaki; and Nagano, Toshihiro, 4,280,455, Cl. 123-196.00M.

Nagano, Yasuaki, to Shibuya Kogyo Company, Ltd. Positioning device for bottles having protruded or indented spots. 4,280,612, Cl. 198-379.000.

Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, to Nitto Boseki Co., Ltd.; and Iatron Laboratories, Inc. Novel L-γ-glutamyl-3-carboxy-4-hydroxyanilide and salts thereof. 4,281,181, Cl. 562-453.000.

Nagata, Kenzo: *See*—
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,280,763, Cl. 355-14.00R.

Nagata, Yoshiaki; and Fukui, Shinya, to Hexa Chemical. Molding having grain of a natural material and method for producing same. 4,280,950, Cl. 260-42.210.

Nagayama, Mitsuyoshi: *See*—
Nasu, Tetsuji; and Nagayama, Mitsuyoshi, 4,281,322, Cl. 340-638.000.

Nakagawa, Sadayoshi; and Shinohara, Mitsuharu, to Hosiden Electronics Co., Ltd. Miniaturized unidirectional electret microphone. 4,281,222, Cl. 179-111.00E.

Nakahara, James H.: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Ito, Thomas I.; and Nakahara, James H., 4,281,185, Cl. 564-13.000.

Nakamura, Takanori: *See*—
Shindome, Mamoru; Yanagita, Takanori; Nakamura, Takanori; and Otsuji, Hiroyuki, 4,280,982, Cl. 422-185.000.

Nakamura, Takashi, to Sony Corporation. Apparatus for detecting the color temperature of a source of light and automatic white balancing means for use therewith. 4,281,337, Cl. 358-29.000.

Nakanishi, Ioichiro: *See*—
Yoshioka, Akiyoshi; Shibuya, Yoshikazu; and Nakanishi, Ioichiro, 4,281,209, Cl. 174-14.00R.

Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,280,459, Cl. 123-307.000.

Nakanishi, Motoyoshi. Multi-sound speaker system. 4,280,585, Cl. 181-147.000.

Nakano, Takaaki: *See*—
Noma, Hideyuki; and Nakano, Takaaki, 4,281,238, Cl. 219-535.000.

Nakano, Yutaka. Foldable desk. 4,280,744, Cl. 312-240.000.

Nakasato, Satoshi: *See*—
Suzuki, Osamu; Jigami, Yoshifumi; Nakasato, Satoshi; and Hashimoto, Tetsutaro, 4,281,064, Cl. 435-134.000.

Nakashima, Kunimichi: *See*—
Nakaso, Toru; Nomura, Kenji; and Nakashima, Kunimichi, 4,281,385, Cl. 364-474.000.

Nakaso, Toru; Nomura, Kenji; and Nakashima, Kunimichi, to Toyoda-Koki Kabushiki Kaisha. Control system for a machine tool. 4,281,385, Cl. 364-474.000.

Nakatsuji, Tadao: *See*—
Abe, Kazunobu; and Nakatsuji, Tadao, 4,280,926, Cl. 252-430.000.

Nakayama, Yoshiki; Higuchi, Yasushi; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Ltd. Process for producing indoline derivative. 4,280,958, Cl. 260-326.11R.

Nametz, Richard C.; and Moore, Paul O., to Velsicol Chemical Corporation. Flame retardant polystyrene plastic compositions. 4,280,952, Cl. 260-45.95G.

Narayan, Raichur S., to Sunbeam Corporation. Plating on plastics by softening with trichloroethylene and methylene chloride bath. 4,281,034, Cl. 427-191.000.

Narkon, Norman W., to United Technologies Corporation. Angularly lockable fitting. 4,280,721, Cl. 285-179.000.

Narlow, Douglas A.; and Farrar, James G., to Sensormatic Electronics Corporation. Surveillance system employing a floor mat radiator. 4,281,321, Cl. 340-572.000.

Nashua Corporation: *See*—
Hutchinson, Peter; and Pauk, Henry T., 4,280,692, Cl. 271-160.000.

Nason, William C.: *See*—
LeMahieu, Ronald A.; and Nason, William C., 4,281,127, Cl. 544-287.000.

Nassau Recycle Corporation: *See*—
Budzich, Mieczyslaw; Fitz, Forest G., Jr.; and Lawrence, Andrew M., 4,280,901, Cl. 209-154.000.

Nasu, Tetsuji; and Nagayama, Mitsuyoshi, to Nissan Motor Company, Ltd. Fuse blowing detector. 4,281,322, Cl. 340-638.000.

National Research Dev'p Corp.: *See*—
Wetton, Raymond E.; and James, David B., 4,281,072, Cl. 525-4.000.

National Starch and Chemical Corporation: *See*—
Jarowenko, Wadym; and Solarek, Daniel B., 4,281,109, Cl. 536-50.000.

Naylor, Carl A., to Allis-Chalmers Corporation. Anti-arc prod. 4,281,230, Cl. 200-61.58R.

Neal, Joseph H.; and Reed, Paul A., to Texas Instruments Incorporated. Virtual ground MOS EPROM or ROM matrix. 4,281,397, Cl. 365-189.000.

Necchi S.p.A.: *See*—
Carbonato, Gianfranco; and Bianchi, Nereo, 4,280,424, Cl. 112-158.00E.

Neefe, Charles W. Permeable wettable contact lens. 4,280,759, Cl. 351-160.00R.

Neelameggham, Ramaswami, to AMAX Magnesium Corporation. Electrode assembly for melt cell. 4,280,891, Cl. 204-243.00R.

Negrich, George, Sr., deceased; and by Negrich, Helen, executrix. Method for fabricating large diameter gears, gear-blanks and the like. 4,280,264, Cl. 29-159.200.

Negrich, Helen, executrix: *See*—
Negrich, George, Sr., deceased; and Negrich, Helen, executrix, 4,280,264, Cl. 29-159.200.

Nehring, Kenneth L.: *See*—
Leanna, Dale D.; Jorgensen, Allen R.; Terp, Gerald W.; LaHaye, John; and Nehring, Kenneth L., 4,280,669, Cl. 242-56.00A.

Neier, Wilhelm: *See*—
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,281,206, Cl. 568-396.000.

Nelson, Bennie C., Jr., to Container Corporation of America. Tapered insert. 4,280,622, Cl. 206-592.000.

Nelson, Bennie C., Jr.: *See*—
Gardner, Jeffrey M.; Sensenbrenner, Ronald R.; and Nelson, Bennie C., Jr., 4,280,650, Cl. 229-15.000.

Nelson, Edward J.: *See*—
Warner, Willis L.; and Nelson, Edward J., 4,280,497, Cl. 128-272.000.

Nelson, Hugh D., to Mono Pumps Limited. Bore hole pumps. 4,280,793, Cl. 415-199.500.

Nelson, Thomas L., to Du Pont de Nemours, E. I., and Company. Process for making heather yarn from bulked continuous-filament yarns. 4,280,261, Cl. 28-271.000.

Nercessian, Sarkis, to Kepco, Inc. High positive and negative voltages programmed by a low voltage returned to common. 4,281,282, Cl. 323-350.000.

Netravali, Arun N.: *See*—
Mounts, Frank W.; and Ne:.avali, Arun N., 4,281,344, Cl. 358-136.000.

Neubauer, Frank W. Flexible mirror assembly. 4,280,753, Cl. 350-295.000.

Neufeldt, Jacob J. Refuse container. 4,280,780, Cl. 414-572.000.

Neuscheler, Wilhelm. Handle for water ski towline with engagement and disengagement means for water ski safety belt. 4,280,240, Cl. 9-310.00A.

Newbold, William F., to Honeywell Inc. Signal isolator. 4,281,299, Cl. 333-187.000.

Newcomb, Ross G. Wheel line chain lubricator. 4,280,591, Cl. 184-17.000.

Newman, Robert A.: *See*—
Hogg, Gerald J.; Newman, Robert A.; and Pfeifer, Robert F., 4,281,216, Cl. 178-22.080.

Newnham, Robert C.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,281,241, Cl. 235-400.000.

Newport News Industrial Corporation: *See*—
May, John R., 4,280,921, Cl. 252-301.10W.

NGK Insulators, Ltd.: *See*—
Matsuhisa, Tadaaki; and Soejima, Shigeo, 4,280,845, Cl. 106-62.000.
Suzuki, Go, 4,280,977, Cl. 264-153.000.

Niemand, Carel W. P.: *See*—
Payne, Barrett M. M., 4,280,680, Cl. 251-175.000.

Nifco Inc.: *See*—
Hara, Kunio, 4,281,307, Cl. 337-114.000.

Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See*—
Hirai, Akira; Tanaka, Yukihisa; and Ohashi, Shigeo, 4,281,232, Cl. 200-315.000.

Nilsson, Gosta, to AB Gemla Plast. Slit valve ventilator and method of attaching same. 4,280,647, Cl. 227-147.000.

Nilsson, Jack E., Sr., to Seige Corporation. Method and apparatus for collecting, intensifying and storing solar energy. 4,280,482, Cl. 126-430.000.

Nippon Electric Co., Ltd.: *See*—
Morishita, Masanobu; and Tanaka, Takanori, 4,281,339, Cl. 358-52.000.
Tsuzuki, Mitsuo; and Suga, Michihisa, 4,281,333, Cl. 346-140.00R.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ito, Tsugio; Aizawa, Kenshiro; and Okada, Hisashi, 4,281,225, Cl. 369-139.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Kobayashi, Kenji; Hibi, Katuhiko; Kobayashi, Hisabumi; and Kato, Shoichi, 4,280,834, Cl. 71-103.000.
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,281,180, Cl. 562-448.000.

Nippon Steel Corporation: *See*—
Shiozaki, Morio; Kawashima, Mitsuaki; Shimoyama, Yoshiaki; and Ishihara, Nobuoki, 4,280,837, Cl. 75-54.000.

Nippon Tungsten Co., Ltd.: *See*—
Ito, Hiroshi; and Sakaguchi, Shigeya, 4,280,841, Cl. 75-203.000.

Nippon Zoki Pharmaceutical Co., Ltd.: *See*—
Konishi, Jin-emon, 4,281,009, Cl. 424-273.00R.

Nippondenso Co., Ltd.: *See*—
Miyamoto, Yoshimi; and Tanigawa, Tetsuo, 4,281,214, Cl. 174-138.00F.
Okuda, Ryoichi; Makino, Tomoatsu; and Miwa, Katsuteru, 4,280,461, Cl. 123-418.000.

Nishida, Katsutoshi: *See*—
Seimiya, Motoo; and Nishida, Katsutoshi, 4,280,989, Cl. 423-344.000.

Nishida, Kouji; Miyake, Osamu; Kawai, Taneichi; and Hamajima, Shigemitsu, to Aisin Seiki Kabushiki Kaisha. Automatic embroidery sewing machine. 4,280,420, Cl. 112-103.000.

Nishimura, Satoshi; Shimizu, Tetsuo; Sato, Kenichi; and Asano, Takehiko, to Sanyo Electric Co., Ltd. Noise reducing apparatus. 4,281,295, Cl. 333-14.000.

Nishizawa, Rinzo: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,281,180, Cl. 562-448.000.

Nissan Motor Company, Limited: *See*—
Katayose, Shinji; Sasabe, Yukiyoshi; Yokota, Yoshiaki; Kuroki, Junsuke; and Torii, Shuuji, 4,280,411, Cl. 104-112.000.
Kobayashi, Hiroshi; Kita, Toru; and Fujishiro, Takeshi, 4,280,360, Cl. 73-198.000.
Maruoka, Hiroyuki, 4,280,467, Cl. 123-536.000.
Masaki, Kenji, 4,280,471, Cl. 123-571.000.
Nasu, Tetsuji; and Nagayama, Mitsuyoshi, 4,281,322, Cl. 340-638.000.

Nitto Boseki Co., Ltd.: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,281,181, Cl. 562-453.000.

Nitto Chemical Industry Co., Ltd.: *See*—
Kametani, Yoshiya; and Iino, Yasuo, 4,281,175, Cl. 560-217.000.

NL Industries, Inc.: *See*—
Brauer, Melvin; and Kroplinski, Thaddeus F., 4,281,210, Cl. 174-23.00C.
Kercheville, James D., 4,280,915, Cl. 252-8.50C.

Nobile, Riccardo: *See*—
Caldarella, Riccardo; and Nobile, Riccardo, 4,281,292, Cl. 329-50.000.

Noble, Henry J., III: *See*—
Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, 4,280,768, Cl. 403-3.000.

Noda Shokkin Kogyo Kabushiki Gaisha: *See*—
Iizuka, Chiyokichi; and Maeda, Hiroaki, 4,281,021, Cl. 426-61.000.

Noma, Hideyuki; and Nakano, Takaaki, to Shin-Etsu Polymer Co., Ltd. Tubular jacket heater. 4,281,238, Cl. 219-535.000.

Nomori, Hiroyuki: *See*—
Moriguchi, Hiroyuki; Haneda, Satoshi; Kaneko, Tadashi; Itoh, Akira; Shimura, Takeo; Matsumoto, Masanori; and Nomori, Hiroyuki, 4,281,055, Cl. 430-60.000.

Nomura, Kenji: *See*—
Nakaso, Toru; Nomura, Kenji; and Nakashima, Kunimichi, 4,281,385, Cl. 364-474.000.

Nomura, Takao; Umemoto, Yoshiro; and Takao, Shuichiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Manufacturing process for polyurethane auto parts and auto parts manufactured thereby. 4,281,096, Cl. 528-53.000.

Nonn, Konrad; Walz, Klaus; Wolf, Karlheinz; and Boehmke, Gunther, to Bayer Aktiengesellschaft. Phosphonic acid esters. 4,280,960, Cl. 260-403.000.

Nonomura, Keisaku; Takamatsu, Toshiaki; Uede, Hisashi; and Wada, Tomio, to Sharp Kabushiki Kaisha. Matrix type liquid crystal display. 4,281,324, Cl. 340-784.000.

Noorlander, Daniel O. Inflation for teat cup assembly. 4,280,446, Cl. 119-14.490.

Noranda Mines Limited: *See*—
Peacey, John G.; Ebersole, Ralph R.; Kitzinger, Frank; and Viens, Jean-Claude, 4,281,290, Cl. 324-426.000.

Nordica S.p.A.: *See*—
Sartor, Mariano, 4,280,286, Cl. 36-118.000.

Norlin Industries, Inc.: *See*—
Rock, Joseph, Jr., 4,281,415, Cl. 455-173.000.

Norlin Music, Inc.: *See*—
Moog, Robert A., 4,280,387, Cl. 84-1.010.

Norlund, Bruce K.: *See*—
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,334, Cl. 346-153.100.
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,335, Cl. 346-153.100.

Norton, James F., to Hansen Manufacturing Company, The. Thermal responsive coupling. 4,280,523, Cl. 137-74.000.

Novametrix Medical Systems, Inc.: *See*—
Dali, Carmelo; and Rich, David R., 4,280,505, Cl. 128-635.000.

Noyori, Ryoji, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a triorganosilylated 2,3-unsaturated alcohol. 4,281,148, Cl. 556-470.000.

NSK-Warner K.K.: *See*—
Makishima, Yoshihiro, 4,280,584, Cl. 180-268.000.

Nubert, Ingomar: *See*—
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, 4,281,010, Cl. 424-275.000.

Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., to Schering Aktiengesellschaft. 1,3,4-Thiadiazole-2-carboxylic acid derivatives, process for making the same and fungicidal and nematocidal compositions containing same. 4,281,121, Cl. 544-134.000.

N.V. Nederlandsche Apparatenfabriek NEDAP: *See*—
de Jong, Hendrik J., 4,280,256, Cl. 24-155.0BR.

O. M. Scott and Sons Company: *See*—
Ferguson, Fred E.; Hughes, Rory R.; and Fersch, Kenneth E., 4,280,830, Cl. 71-25.000.

Oberhardt, Bruce J.; and Wotherspoon, Neil, to Technicon Instruments Corporation. Electrochemiluminescent immunoassay and apparatus therefor. 4,280,815, Cl. 23-230.00B.

Oblinger, Fred G., to Ford Motor Company. Hydrolytic decomposition method. 4,281,197, Cl. 564-393.000.

Occidental Research Corporation: *See*—
Green, Norman W., 4,280,876, Cl. 201-9.000.

O'Connor, John D. Device for rinsing and cleaning a drag cloth. 4,280,344, Cl. 68-213.000.

Odagi, Kanji: *See*—
Wada, Ryoichi; Tsuchiya, Mitsuharu; Odagi, Kanji; and Senoo, Takanori, 4,281,355, Cl. 360-32.000.

Ogawa, Norito: *See*—
Miyake, Tetsuya; Ogawa, Norito; Inada, Kohji; and Takeda, Kunihiko, 4,280,984, Cl. 423-6.000.

Ogawa, Yukio; Suzuki, Ryoichi; Kinoshita, Takao; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Electromagnetic shutter driving circuit. 4,280,761, Cl. 354-29.000.

Ogino, Yoshio; Mizukawa, Takumi; and Yoshida, Hirokazu, to Matsushita Electric Industrial Co., Ltd. Frequency inverter. 4,281,378, Cl. 363-96.000.

Ogiwara, Osao, to Akebono Brake Industry Company, Ltd. Friction material comprising an iron powder having a carbon content of from 0.5–1 percent. 4,280,935, Cl. 260-3.000.

Ohara, Isao. Centrifugal casting apparatus for dentistry. 4,280,551, Cl. 164-287.000.

Ohashi, Shigeo: *See*—
Hirai, Akira; Tanaka, Yukihisa; and Ohashi, Shigeo, 4,281,232, Cl. 200-315.000.

Ohishi, Hiroyuki: *See*—
Saito, Toranosuke; and Ohishi, Hiroyuki, 4,280,951, Cl. 260-45.80R.

Ohmori, Taiji; Tsuchiya, Yoshikazu; Sato, Makoto; Miyakawa, Yoshitaka; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Skid prevention method and an anti-skid brake device. 4,280,740, Cl. 303-92.000.

Ohno, Ietatsu. Grinding method and apparatus. 4,280,302, Cl. 51-7.000.

Ohno, Shigeru: *See*—
Ito, Hiroshi; Endo, Ichiro; and Ohno, Shigeru, 4,281,052, Cl. 430-48.000.

Ohta, Tokuya: *See*—
Yano, Yasuhiro; Haruta, Masahiro; and Ohta, Tokuya, 4,281,329, Cl. 346-1.100.

Oien, Hal J.: *See*—
Johnsen, James B.; and Oien, Hal J., 4,280,808, Cl. 433-77.000.

Oka, Toshio, to Zenzaburo Kawanishi. Whistle. 4,280,299, Cl. 46-179.000.

Okada, Hisashi: *See*—
Ito, Tsugio; Aizawa, Kenshiro; and Okada, Hisashi, 4,281,225, Cl. 369-139.000.

Okamoto, Eiichi: *See*—
Kondow, Ryotaro; and Okamoto, Eiichi, 4,281,386, Cl. 364-492.000.

Okamoto, Hiroyuki; Tsuda, Yoshio; and Yokoyama, Kazumasa, to Green Cross Corporation, The. Fat emulsion for intravenous injection. 4,280,996, Cl. 424-199.000.

Okuda, Ryoichi; Makino, Tomoatsu; and Miwa, Katsuteru, to Nippondenso Co., Ltd. Contactless ignition system for internal combustion engines. 4,280,461, Cl. 123-418.000.

Okumura, Takeshi: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,280,459, Cl. 123-307.000.

Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., to Hewlett-Packard Company. Programmable calculator including means for performing computed and uncomputed relative branching during program execution. 4,281,390, Cl. 364-706.000.

Olander, Walter K., to General Electric Company. Manganese complexes of salicylaldehyde-alkanolimines as catalysts for the polymerization of 2,6-di-substituted phenols. 4,280,963, Cl. 260-429.00C.

Olson, Harry W. Thermally actuated cut-off link or switch and method of making the same. 4,281,309, Cl. 337-409.000.

Olympus Optical Co., Ltd.: *See*—
Tojo, Tsutomu, 4,280,757, Cl. 350-414.000.

O'Neill, Edward G., to Medtronic, Inc. Sutureless myocardial lead introducer. 4,280,510, Cl. 128-784.000.

O'Neill, Edward G., to Medtronic, Inc. Ring electrode for pacing lead and process of making same. 4,280,511, Cl. 128-784.000.

Onikov, Eduard A.; Galperin, Alexandr L.; Serebryannikov, Albert S.; Zabotin, Alexandr A.; and Loschilin, Evgeny D. Apparatus for gripping a running weft thread on travelling-wave looms. 4,280,537, Cl. 139-436.000.

Ono, Kazuaki. Tubular flexible medical instrument. 4,280,500, Cl. 128-348.000.

Optelecom, Inc.: *See*—
Culver, William H., 4,281,253, Cl. 250-551.000.

O'Rourke, Joseph D.: *See*—
Pitchon, Esra; O'Rourke, Joseph D.; and Joseph, Theodore H., 4,280,851, Cl. 127-33.000.

Orthopedic Technology, Inc.: *See*—
Polsky, Robert D.; and Daneman, Alexis G., 4,280,488, Cl. 128-80.00H.

Osborn, Robert A.: *See*—
Bullard, Herbert L.; and Osborn, Robert A., 4,281,080, Cl. 525-205.000.

Osborne, Franklin T.: *See*—
Shen, Hsiang-Sheng; Plischke, LeMoyne W.; Baggett, William M.; and Osborne, Franklin T., 4,280,860, Cl. 156-167.000.

Osby, Warren J.: *See*—
Willenbring, Armer J.; Osby, Warren J.; and Gausman, James W., 4,280,381, Cl. 83-86.000.

Oscar Mayer & Company, Inc.: *See*—
Balch, James L.; Anderson, James E.; and Sadeski, Boleslaus J., 4,280,614, Cl. 198-425.000.

Oshige, Yoshinobu: *See*—
Sumi, Takehiko; Oshige, Yoshinobu; Koike, Yoshio; and Matsumoto, Kazuya, 4,281,045, Cl. 428-516.000.

Osterhoff, Heinz: *See*—
Leithauser, Horst; Osterhoff, Heinz; and Trukenbrod, Karl, 4,281,036, Cl. 427-222.000.

Ostermann, Jerry L. Livestock sorting device. 4,280,448, Cl. 119-155.000.

Otis Elevator Company: *See*—
Salmon, John K.; and Beazley, Dwight, 4,280,600, Cl. 188-312.000.

Otis Engineering Corporation: *See*—
Fredd, John V., 4,280,561, Cl. 166-332.000.

Otsuji, Hiroyuki: *See*—
Shindome, Mamoru; Yanagita, Takanori; Nakamura, Takanori; and Otsuji, Hiroyuki, 4,280,982, Cl. 422-185.000.

Otts, Charles. Apparatus for installing strips of material to support elements of a building. 4,280,312, Cl. 52-749.000.

Oude Alink, Bernardus A., to Petrolite Corporation. N-Substituted 1,2,3,4-tetrahydropyrimidines, Hexahydropyrimidines and process for their preparation. 4,281,126, Cl. 544-242.000.

Ovshinsky, Stanford R.; Angell, Daniel K.; and Yu, Terry T., to Energy Conversion Devices, Inc. Tellurium imaging composition. 4,281,058, Cl. 430-296.000.

Owen, Peter W.: *See*—
Sanner, James W.; and Owen, Peter W., 4,281,137, Cl. 548-239.000.

Owens-Corning Fiberglas Corporation: *See*—
Holt, Dennis S., 4,280,253, Cl. 19-296.000.

Owens-Illinois, Inc.: *See*—
Lohrman, Richard D., 4,280,631, Cl. 215-204.000.
Santiago, Edgardo, 4,281,040, Cl. 428-195.000.

Oy Ensio Miettinen AB: *See*—
Ijas, Seppo, 4,280,567, Cl. 173-129.000.

Oyama, Yoshishige: *See*—
Kuroiwa, Hiroshi; and Oyama, Yoshishige, 4,280,462, Cl. 123-437.000.

Ozawa, Toshiyuki, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Digital phase comparing apparatus. 4,281,259, Cl. 307-514.000.

Pace, W. David, to Motorola, Inc. Masked hysteresis in dual-slope analog-to-digital converter. 4,281,317, Cl. 340-347.0NT.

Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Ito, Thomas I.; and Nakahara, James H., to United States of America, Air Force. Symmetrical diphosphatetraazacyclooctatetraenes. 4,281,185, Cl. 564-13.000.

PAJ Corporation: *See—*
Wright, Patrick, 4,280,282, Cl. 33-427.000.

Pako Corporation: *See—*
Willenbring, Armer J.; Osby, Warren J.; and Gausman, James W., 4,280,381, Cl. 83-86.000.

Palazzetti, Mario; Ponti, Cesare; and Tenci, Pier L., to Centro Ricerche Fiat S.p.A. Solar energy conversion unit. 4,280,853, Cl. 136-246.000.

Palitex Project Company GmbH: *See—*
Inger, Siegfried, 4,280,322, Cl. 57-81.000.

Palmisano, Edward A.: *See—*
Bayer, Eric W.; and Palmisano, Edward A., 4,281,359, Cl. 361-115.000.

Pamm, Georges, to Du Pont de Nemours, E. I., and Company. Polyester fiberfill blends. 4,281,042, Cl. 428-361.000.

Papadopoulos, George. Automatically locking brake assembly. 4,280,605, Cl. 192-8.00R.

Papantoniou, Christos: *See—*
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,281,192, Cl. 564-207.000.

Paparizos, Christos: *See—*
Shaw, Wilfrid G.; Paparizos, Christos; and Callahan, James L., 4,280,929, Cl. 252-439.000.

Papenfuhs, Theodor; and Gengnagel, Kurt, to Hoechst Aktiengesellschaft. Process for the preparation of 2,4-dinitrophenyl urea. 4,281,187, Cl. 564-50.000.

Pardon, David W.: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,281,241, Cl. 235-400.000.

Pardue, James I., Jr.; Hornsby, William M.; and Noble, Henry J., III, to Dixie Electrical Manufacturing Company. Anchor drive coupler. 4,280,768, Cl. 403-3.000.

Parsons, George W., Jr.; and Drainoni, Riccardo A., to Technical Operations, Inc. Coupling apparatus for portable radiography systems. 4,281,252, Cl. 250-497.000.

Parthasarathy, R.; and Hort, Eugene V., to GAF Corporation. Oxidative dehydrogenation of alkenes or alkadienes to furan compounds. 4,280,959, Cl. 260-346.110.

Parve, Toomas E.: *See—*
Pungas, Toom A.; Parve, Toomas E.; and Min, Mart V., 4,281,281, Cl. 323-271.000.

Patel, Natu R., to Gulf Oil Corporation. Benzylsulfonyl diethylcarbamyl triazole and use as a selective herbicide. 4,280,831, Cl. 71-92.000.

Patriquin, William G., to Gabriel of Canada Limited. Shock absorber with improved piston compression valve mechanism. 4,280,601, Cl. 188-316.000.

Patz, Benjamin W.; Berke, Herbert; and Mendorf, Donald R., to United States of America, Navy. Simplified multilayer circuit board. 4,281,361, Cl. 361-401.000.

Pauk, Henry T.: *See—*
Hutchinson, Peter; and Pauk, Henry T., 4,280,692, Cl. 271-160.000.

Payne, Barrett M. M., to Niemand, Carel W. P., a part interest. Fluid valves. 4,280,680, Cl. 251-175.000.

Pazos, Jose F., to Du Pont de Nemours, E. I., and Company. Polyurethane compositions and process. 4,281,089, Cl. 525-456.000.

PCE Corporation: *See—*
Croyle, Gene F., 4,280,425, Cl. 112-272.000.

Peacey, John G.; Ebersole, Ralph R.; Kitzinger, Frank; and Viens, Jean-Claude, to Noranda Mines Limited. Voltage monitor. 4,281,290, Cl. 324-426.000.

Pease, James F. Fluid control valve and support assembly. 4,280,527, Cl. 137-343.000.

Pechnyo, Michael; and Fowler, Herman H., to Rockwell International Corporation. Fire seal for valves. 4,280,522, Cl. 137-72.000.

Peloquin, Conrad, to Tri Delta Industries, Inc. Method for welding ferrous alloys to aluminum and aluminum alloys or refractory metals. 4,281,235, Cl. 219-121.0ED.

Pennewiss, Horst: *See—*
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,281,081, Cl. 525-281.000.

Pennila, Simo A. O.: *See—*
Wheeler, Norton C., Jr.; Seuferling, John G.; and Pennila, Simo A. O., 4,280,801, Cl. 425-113.000.

Pennsylvania Pacific Corporation: *See—*
Daloisio, Pasquale C., 4,280,640, Cl. 222-561.000.

Pennwalt Corporation: *See—*
Buchholz, Bernard; Welsh, Charles B.; and Miller, Henry C., 4,281,202, Cl. 568-62.000.
Taylor, Kenneth W. J., 4,280,606, Cl. 192-56.00C.

Perettie, Donald J.; and Dean, Norman L., to Dow Chemical Company, The. Preparation of highly chlorinated pyridines. 4,281,135, Cl. 546-345.000.

Perez, Arthur; and Abraham, Fayez F., to Tyler Refrigeration Corporation. Icebank refrigerating and cooling systems for supermarkets. 4,280,335, Cl. 62-332.000.

Perkins, Jack E., to Roberts, Margaret P., a part interest. Motorized walker for the disabled. 4,280,578, Cl. 180-6.500.

Perner, Johannes: *See—*
Stoeckigt, Dieter; Kiessling, Dieter; Perner, Johannes; Trieselt, Wolfgang; and Trapp, Horst, 4,280,919, Cl. 252-135.000.

Peschke, Guenter: *See—*
Wischniewski, Martin; Feicho, Lutz; Fischer, Gerhard; and Peschke, Guenter, 4,280,971, Cl. 264-15.000.

Peter Eckes, Firma: *See—*
Wiesenberger, Alfred; Mager, Lutz; Kolb, Erich; and Kreim, Karl, 4,280,634, Cl. 220-270.000.

Petersen, Ted W. Speaker enclosure. 4,280,586, Cl. 181-150.000.

Peterson, Per V.: *See—*
Hoglund, Hans E.; and Peterson, Per V., 4,280,868, Cl. 162-28.000.

Peterzimmer America, Inc.: *See—*
Dreml, Johann, 4,280,405, Cl. 101-127.100.

Petrichenko, Vladimir F.: *See—*
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Mironenko, Vyacheslav G.; and Kamshitsky, Pavel V., 4,281,304, Cl. 335-72.000.

Petrie, Harold L.: *See—*
Erickson, John W.; and Petrie, Harold L., 4,280,662, Cl. 239-591.000.

Petrie, Warren A., to J. Ray McDermott & Co., Inc. Floating buoy. 4,280,237, Cl. 9-8.00R.

Petrolite Corporation: *See—*
Oude Alink, Bernardus A., 4,281,126, Cl. 544-242.000.

Peveto, John E., to Joy Manufacturing Company. Hydraulic fluid control apparatus. 4,280,397, Cl. 91-452.000.

Pfaff, Deborah L. Child's book. 4,280,241, Cl. 11-1.00R.

Pfaff Industriemaschinen GmbH: *See—*
Jung, Arno, 4,280,422, Cl. 112-147.000.

Pfeifer, Robert F.: *See—*
Hogg, Gerald J.; Newman, Robert A.; and Pfeifer, Robert F., 4,281,216, Cl. 178-22.080.

Pfeiffer, Aloysius T.: *See—*
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., 4,281,057, Cl. 430-270.000.

Pfeiffer, Burkhard: *See—*
Friese, Karl-Hermann; Haecker, Wolf-Dieter; and Pfeiffer, Burkhard, 4,280,890, Cl. 204-195.00S.

Pfeil, Horst, to Aktiengesellschaft Kuhnle, Kopp & Kausch. Method of controlling the supercharge pressure in an internal-combustion engine, and exhaust-gas turbosupercharger for performing the method. 4,280,797, Cl. 417-406.000.

Pfizer Inc.: *See—*
Ives, Jeffrey L., 4,281,004, Cl. 424-263.000.

Pharmaceutical Associates, Inc.: *See—*
Loran, Muriel R., 4,280,995, Cl. 424-180.000.

Philadelphia Gear Corporation: *See—*
Denkowski, Walter J.; and Warsing, Daniel S., 4,280,373, Cl. 74-625.000.

Phillips, Evan M., to AHI Operations Limited. Methods of and/or apparatus for milking animals. 4,280,445, Cl. 119-14.020.

Phillips, William H.: *See—*
Groom, Nelson J.; Anderson, Williard W.; and Phillips, William H., 4,281,384, Cl. 364-453.000.

Piazza, Matthew R., to Hamden Industries, Inc. Process and apparatus for making a plurality of building modules having a foam core and a cementitious shell. 4,280,974, Cl. 264-69.000.

Pieroh, Ernst A.: *See—*
Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., 4,281,121, Cl. 544-134.000.

Pioch, Richard P.: *See—*
Merritt, Leander; and Pioch, Richard P., 4,281,141, Cl. 548-342.000.

Pisecky, Jan: *See—*
Hauberg, Georg H. H.; Krag, Jens; and Pisecky, Jan, 4,281,024, Cl. 426-471.000.

Pitchon, Esra; O'Rourke, Joseph D.; and Joseph, Theodore H., to General Foods Corporation. Process for cooking or gelatinizing materials. 4,280,851, Cl. 127-33.000.

Pitts, William M.; and Herron, Don, to Pitts, William M. Restraining device for wheelchairs and the like. 4,280,731, Cl. 297-487.000.

Plachy, Ivo T., to Telex Computer Products, Inc. Tape transport capstan. 4,280,646, Cl. 226-190.000.

Plagenhoef, Stanley, to Motion Analysis Inc. Golf club and golf club set. 4,280,700, Cl. 273-77.00A.

Platt Saco Lowell Limited: *See—*
Martin, Graham, 4,280,250, Cl. 19-98.000.

Plischke, LeMoyne W.: *See—*
Shen, Hsiang-Sheng; Plischke, LeMoyne W.; Baggett, William M.; and Osborne, Franklin T., 4,280,860, Cl. 156-167.000.

Plouffe, Leo A.; and Unterweger, Diethard, to Texas Instruments Incorporated. Multifunction dynamoelectric protection system. 4,281,358, Cl. 361-22.000.

Poetsch, Dieter; Becker, Werner; Klein, Ottokar; and Wulf, Rudolf, to Robert Bosch GmbH. Apparatus for the line by line optical scanning of a film. 4,281,351, Cl. 358-214.000.

Poland, Donald R.: *See—*
Batting, Robert D.; Chabot, Donald G.; and Poland, Donald R., 4,280,626, Cl. 209-658.000.

Polaroid Corporation: *See—*
Berke, Carl M., 4,281,056, Cl. 430-232.000.

Poleschuk, Nicholas A.; and Purdy, Samuel E., to Beta Manufacturing Corp. Buzzer switch. 4,281,229, Cl. 200-52.00R.

Polizzi Enterprises: *See—*
Polizzi, Louis M., 4,280,590, Cl. 182-214.000.

Polizzi, Louis M., to Polizzi Enterprises. Stabilizing attachment for ladders. 4,280,590, Cl. 182-214.000.

Pollinger, Hans, to Knorr-Bremse GmbH. Brake disk. 4,280,598, Cl. 188-218.0XL.

Polska Akademia Nauk, Zaklad Polimerow: *See—*
Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, 4,281,074, Cl. 525-40.000.

Polsky, Robert D.; and Daneman, Alexis G., to Orthopedic Technology, Inc. Ankle support with elastic panel. 4,280,488, Cl. 128-80.00H.

Polymer Corporation, The: *See—*
Scheetz, Howard A.; and Gilles, Richard C., 4,281,070, Cl. 525-1.000.

Ponder, James E.: *See—*
Lou, Perry W.; Ponder, James E.; and Tubbs, Graham S., 4,280,271, Cl. 29-571.000.

Ponti, Cesare: *See—*
Palazzetti, Mario; Ponti, Cesare; and Tenci, Pier L., 4,280,853, Cl. 136-246.000.

Pophillat, Lucien J. P.; Moalic, Jean J.; and Sorel, Yvon J. Optical fiber transfer function measuring system. 4,280,765, Cl. 356-73.100.

Porter, James A.: *See—*
Siems, Lee E.; and Porter, James A., 4,281,403, Cl. 367-76.000.

Portzer, James R.: *See—*
Murphy, Edward F.; and Portzer, James R., 4,280,827, Cl. 65-11.00W.

Potts, Vinson S., to Crown Cork & Seal Company, Inc. Easy open can end. 4,280,427, Cl. 113-121.00C.

Pouillange, Jean-Paul, to BBC Brown, Boveri & Company, Ltd. Static frequency converter. 4,281,375, Cl. 363-37.000.

Pouliot, Harvey N., to Vadetec Corporation. Ball/ramp system for torque transmission. 4,280,369, Cl. 74-191.000.

PPG Industries, Inc.: *See—*
Macurdy, William B.; and Thompson, Albert E., Jr., 4,280,364, Cl. 73-818.000.
Raetzsch, Carl W., 4,280,883, Cl. 204-98.000.
Seymour, Samuel L., 4,280,828, Cl. 65-106.000.

Pratt, Charles E., to Chattem, Inc. Grease compositions and oxyaluminum acylate intermediate compositions useful in the preparation thereof. 4,280,917, Cl. 252-37.700.

Pratt & Whitney Aircraft of Canada, Limited: *See—*
Roberts, Ivor J., 4,280,678, Cl. 251-61.200.

Preh, Elektrofeinmechanische Werke, Jakob Preh Nachf GmbH & Co.: *See—*
Ambros, Peter; and Geyer, Hermann, 4,281,038, Cl. 428-131.000.

Price, Elvin C. Open edge folder. 4,280,421, Cl. 112-147.000.

Prince, Dominique: *See—*
Escher, Balint; Prince, Dominique; and Vasseux, Jean, 4,280,270, Cl. 29-570.000.

Printronix, Inc.: *See—*
Barrus, Gordon B.; and Matula, Jerry, 4,280,404, Cl. 101-93.030.

Prochnow, Claus, to Rollei-Werke Franke & Heidecke GmbH & Co. Camera having an independently focused retractable objective lens. 4,280,762, Cl. 354-187.000.

Protectoseal Co., The: *See—*
Shaw, Harry N., 4,280,679, Cl. 251-144.000.

Pullman Incorporated: *See—*
Knippel, Willis H., 4,280,778, Cl. 414-387.000.
Miller, Roy W., 4,280,596, Cl. 188-52.000.
Swiecicki, Z. Alexander, 4,280,840, Cl. 75-43.000.

Pungas, Toom A.; Parve, Toomas E.; and Min, Mart V. Reference voltage source. 4,281,281, Cl. 323-271.000.

Punis, Giancarlo: *See—*
Connery, James G.; DiNapoli, Louis D.; and Punis, Giancarlo, 4,280,365, Cl. 73-861.250.

Purdue Frederick Company, The: *See—*
Shetty, Bola V.; and Airey, John E., 4,281,138, Cl. 548-306.000.

Purdue Research Foundation: *See—*
Tsao, George T.; Ladisch, Michael R.; Ladisch, Christine M.; and Hsu, Teh-An, 4,281,063, Cl. 435-99.000.

Purdy, Samuel E.: *See—*
Poleschuk, Nicholas A.; and Purdy, Samuel E., 4,281,229, Cl. 200-52.00R.

Puropore Inc.: *See—*
Kesting, Robert E., 4,280,970, Cl. 264-1.700.

Puthawala, Anwer; Meichsner, Othmar; and Marr, Erich, to Kraftwerk Union Aktiengesellschaft. Method and apparatus for embedding radioactive pulverulent organic waste in a thermoplastic mass. 4,280,922, Cl. 252-301.10W.

Pyves, Richard R., to General Foods Limited. Soluble coffee process. 4,281,023, Cl. 426-385.000.

Quackenbush, Carr L. W.: *See—*
Smith, J. Thomas; Quackenbush, Carr L. W.; and Reid, F. Joseph, 4,280,850, Cl. 106-73.200.

Quad Chemical Corporation: *See—*
Abend, Phillip G., 4,281,201, Cl. 564-506.000.

Quigley, John T.: *See—*
Durda, Daniel J.; and Quigley, John T., 4,280,911, Cl. 210-629.000.

R. C. Sanders Technology Systems, Inc.: *See—*
Sousa, Frank E., 4,281,356, Cl. 360-45.000.

Raab, Simon. Bone connective prosthesis comprising a reinforcement element carrying a polymer layer having a varying modulus of elasticity. 4,280,233, Cl. 3-1.910.

Racke, Joseph. Belt retention means for garments. 4,280,254, Cl. 24-336.000.

Rackley, Ray A.; and Carpenter, David V., to Garrett Corporation, The. Radiant surface combustor. 4,280,329, Cl. 60-754.000.

Radaelli, Dario: *See—*
Bassi, Aldo; Radaelli, Dario; and Rogora, Edoardo, 4,280,460, Cl. 123-382.000.

Radiation Dynamics, Inc.: *See—*
Thompson, Chester C.; and Cleland, Marshall R., 4,281,251, Cl. 250-398.000.

Radler, Richard W.: *See—*
Horgan, Anthony M.; and Radler, Richard W., 4,281,054, Cl. 430-59.000.

Raetzsch, Carl W., to PPG Industries, Inc. Method of operating a solid polymer electrolyte chlor-alkali cell. 4,280,883, Cl. 204-98.000.

Ramacciotti, William S. Animal carcass handling vehicle. 4,280,784, Cl. 414-722.000.

Ramer, James L. Concrete railroad track. 4,280,657, Cl. 238-267.000.

Ramon, Yoav. Jaw and facial muscle exerciser. 4,280,696, Cl. 272-95.000.

Rao, G. R. Mohan: *See—*
Redwine, Donald J.; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,281,401, Cl. 365-222.000.

Raposo, Sulpicio B. Solar heating plant. 4,280,480, Cl. 126-429.000.

Rassmann, Christoph; Hauschopp, Alois; Schwolow, Gunter; and Huss, Horst, to Gewerkschaft Eisenhutte Westfalia. Asymmetric mineral mining plough. 4,280,733, Cl. 299-34.000.

Rau, Harald: *See—*
Koerner, Gotz; Kropac, Vaclav; and Rau, Harald, 4,281,147, Cl. 556-459.000.

Raudman, Charles J. Vehicle wheel. 4,280,736, Cl. 301-6.0CS.

Raue, Roderich: *See—*
Lehment, Klaus-Friedrich; Raue, Roderich; and Gleinig, Harald, 4,281,112, Cl. 542-417.000.

RCA Corporation: *See—*
Abeles, Benjamin, 4,281,270, Cl. 313-444.000.
Bilsky, Herbert W.; and Callen, Patrick J., 4,281,278, Cl. 320-13.000.
Crosby, Edward L., Jr., 4,280,674, Cl. 244-99.000.
Datta, Pabitra; and Friel, Ronald N., 4,280,941, Cl. 260-23.0XA.
George, John B., 4,281,349, Cl. 358-191.100.
Schanzer, Henry I.; and Stewart, Roger G., 4,281,400, Cl. 365-203.000.
Tosima, Soitiro, 4,281,407, Cl. 369-130.000.

Reale, Lucio. Preparing fruit juice powder. 4,281,026, Cl. 426-599.000.

Redfern, Martin W.: *See—*
Chapman, Peter; and Redfern, Martin W., 4,281,275, Cl. 315-399.000.

Redwine, Donald J.; White, Lionel S., Jr.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. Semiconductor read/write memory array having high speed serial shift register access. 4,281,401, Cl. 365-222.000.

Reed, Paul A.: *See—*
Neal, Joseph H.; and Reed, Paul A., 4,281,397, Cl. 365-189.000.

Reid, F. Joseph: *See—*
Smith, J. Thomas; Quackenbush, Carr L. W.; and Reid, F. Joseph, 4,280,850, Cl. 106-73.200.

Reimer, Karl-Heinz: *See—*
Agricola, Manfred; Dietze, Klaus; Mayr-Stein, Horst; Reimer, Karl-Heinz; Reinhold, Andreas; Schmid, Adolf; and Schosnig, Johannes-Georg, 4,281,410, Cl. 370-110.000.

Reimler Associates, Inc.: *See—*
Reimler, Marion W.; Reimler, James L.; and Reimler, John S., 4,280,541, Cl. 144-208.00E.

Reimler, James L.: *See—*
Reimler, Marion W.; Reimler, James L.; and Reimler, John S., 4,280,541, Cl. 144-208.00E.

Reimler, John S.: *See—*
Reimler, Marion W.; Reimler, James L.; and Reimler, John S., 4,280,541, Cl. 144-208.00E.

Reimler, Marion W.; Reimler, James L.; and Reimler, John S., to Reimler Associates, Inc. Debarking tool for log debarking machines. 4,280,541, Cl. 144-208.00E.

Reiners, Neville H.: *See—*
Gaal, Stephen L.; Gant, Gary L.; Muntean, George L.; Reiners, Neville H.; and Shea, Michael H., 4,280,659, Cl. 239-124.000.

Reinhard, Theodor: *See—*
Grabner, Christian; Reinhard, Theodor; Krugener, Rolf; and Kurth, Hermann W., 4,280,349, Cl. 70-358.000.

Reinhold, Andreas: *See—*
Agricola, Manfred; Dietze, Klaus; Mayr-Stein, Horst; Reimer, Karl-Heinz; Reinhold, Andreas; Schmid, Adolf; and Schosnig, Johannes-Georg, 4,281,410, Cl. 370-110.000.

Reinsch, Arnold O. W. Flash jet coolant circulation system. 4,280,796, Cl. 417-176.000.

Reiter, Kurt: *See—*
Kunstle, Konrad; Reiter, Kurt; and Koch, Christian, 4,280,449, Cl. 122-4.00R.

Renholmens Mekaniska Verkstad AB: *See—*
Hellgren, Hans; and Marklund, Erland, 4,280,382, Cl. 83-106.000.

Resnick, Martin L.: *See—*
Fox, Jeffrey R.; Margolies, Arthur; Moolenbeek, Rob; and Resnick, Martin L., 4,281,394, Cl. 364-900.000.

Reuland, Joachim, to Hauni-Werke Korber & Co. KG. Method and apparatus for producing a continuous filler of tobacco or the like. 4,280,516, Cl. 131-84.00C.

Rexroad, James O.; and Majcher, John P., to Westinghouse Electric Corp. Drawout switchgear with blow-out prevention device. 4,281,227, Cl. 200-50.0AA.

Reynolds, Jerald J.: *See—*
Escott, Barnee M.; Reynolds, Jerald J.; and Ward, William C., 4,281,032, Cl. 427-135.000.

Rhau, Siegfried: *See—*
Weber, Adolf; Rhau, Siegfried; and Ahlers, Utz-Udo, 4,280,408, Cl. 102-501.000.

Rhone-Poulenc Industries: *See—*
Bontempelli, Jean-Claude, 4,280,980, Cl. 422-40.000.
Gruffaz, Max; and Micaelli, Odile, 4,281,176, Cl. 560-247.000.

Ricca, Robert F.: *See—*
Bauer, Henry C.; Burns, Gary J.; Buzzard, Clair A.; Gordon, Travis H.; Kahlbrock, Heinz; Ricca, Robert F.; and Zachok, Robert M., 4,281,315, Cl. 340-147.00R.

Rice, Sondra L.: *See—*
Homola, Andrew M.; and Rice, Sondra L., 4,280,918, Cl. 252-62.510.

Rich, David R.: *See—*
Dali, Carmelo; and Rich, David R., 4,280,505, Cl. 128-635.000.

Richard Wolf GmbH: *See—*
Wurster, Helmut; and Blanc, Ernst, 4,281,366, Cl. 362-32.000.

Richards, Gordon, to Bristol Tool & Gauge Company Limited. Indexing device. 4,280,377, Cl. 74-813.00R.

Richards, Harry F.; and Carlson, Douglas C., to Shell Oil Company. Lubricant composition. 4,280,916, Cl. 252-33.400.

Richards, John A. Thermal electric converter. 4,281,280, Cl. 322-2.00R.

Richardson-Merrell Inc.: *See—*
Dhabhar, Dadi J.; Heyd, Allen; and Schmidt, Nicholas F., 4,280,936, Cl. 260-13.000.
Grisar, J. Martin; and Wiech, Norbert L., 4,281,006, Cl. 424-267.000.

Ricks, Michael J.: *See—*
Malhotra, Sudarshan K.; and Ricks, Michael J., 4,281,133, Cl. 546-298.000.

Ricoh Company, Ltd.: *See—*
Horike, Masanori, 4,281,332, Cl. 346-75.000.
Matsuhisa, Koh; Takezawa, Mamoru; and Kawajiri, Yoshio, 4,280,693, Cl. 271-246.000.
Roberts, Ben D., Jr., 4,281,319, Cl. 340-347.0DA.
Sakai, Katsuo, 4,281,051, Cl. 430-42.000.

Rie, John E.: *See—*
Bush, Richard W.; Jenkins, Russell J.; and Rie, John E., 4,280,888, Cl. 204-159.150.

Riedel, Peter: *See—*
Lupertz, Hans-Henning; and Riedel, Peter, 4,280,738, Cl. 303-6.00C.

Robbins, Clayton B.: *See—*
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,334, Cl. 346-153.100.
Moore, Robert A.; Norlund, Bruce K.; Kontrovitz, Harold S.; Robbins, Clayton B.; and Brooks, Jeffrey B., 4,281,335, Cl. 346-153.100.

Robert Bosch GmbH: *See—*
Friese, Karl-Hermann; Haecker, Wolf-Dieter; and Pfeiffer, Burkhard, 4,280,890, Cl. 204-195.00S.
Poetsch, Dieter; Becker, Werner; Klein, Ottokar; and Wulf, Rudolf, 4,281,351, Cl. 358-214.000.
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,280,359, Cl. 73-123.000.
Struve, Hans-Dirk; Hess, Jurgen; and Vysiotis, Theodor, 4,280,799, Cl. 418-97.000.

Roberts, Ben D., Jr., to Ricoh Company, Ltd. Digital-to-analog converter. 4,281,319, Cl. 340-347.0DA.

Roberts, David P.: *See—*
Eacret, Dan P., 4,280,641, Cl. 223-1.000.

Roberts, Ivor J., to Pratt & Whitney Aircraft of Canada, Limited. Bleed valve. 4,280,678, Cl. 251-61.200.

Roberts, Margaret P.: *See—*
Perkins, Jack E., 4,280,578, Cl. 180-6.500.

Roberts, Raymond J., to Consarc Corporation. Electroslag remelting furnace with improved power connection. 4,280,550, Cl. 164-252.000.

Robertshaw Controls Company: *See—*
Bible, Harley V.; and Moon, William T., Jr., 4,280,532, Cl. 137-882.000.
Sliger, Boyd P., 4,280,654, Cl. 236-34.500.

Rock, Joseph, Jr., to Norlin Industries, Inc. Digital tuner. 4,281,415, Cl. 455-173.000.

Rockwell International Corporation: *See—*
Eshghy, Siavash, 4,280,380, Cl. 81-470.000.
Meacham, Craig L., 4,280,610, Cl. 192-132.000.
Pechnyo, Michael; and Fowler, Herman H., 4,280,522, Cl. 137-72.000.
Siniscal, Paul D.; Hebert, David L.; and Benzing, J. Paige, 4,280,615, Cl. 198-470.000.

Rodler, Hans, to Somartec S.A., Firma. Device for treatment with interference currents. 4,280,504, Cl. 128-420.00A.

Rogers Corporation: *See—*
Walters, Linwood A.; and Mersereau, J. Mark, 4,281,044, Cl. 428-460.000.

Rogge, Gail E. Third axle attachment for motor vehicles. 4,280,710, Cl. 280-81.00R.

Rogols, Saul: *See—*
Johnson, Donald L.; Bond, John L.; Rogols, Saul; and Salter, John W., 4,280,718, Cl. 282-27.500.

Rogora, Edoardo: *See—*
Bassi, Aldo; Radaelli, Dario; and Rogora, Edoardo, 4,280,460, Cl. 123-382.000.

Rohm GmbH: *See—*
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,281,081, Cl. 525-281.000.

Rohm and Haas Company: *See—*
Fellmann, Robert P.; Kory, Daniel R.; and Staas, William H., 4,281,084, Cl. 525-309.000.
Kirch, Lawrence S.; and Kennelly, William J., 4,280,928, Cl. 252-432.000.

Roll-Rite Corp.: *See—*
Christensen, Carl O., 4,280,246, Cl. 16-35.00D.

Rollei-Werke Franke & Heidecke GmbH & Co.: *See—*
Prochnow, Claus, 4,280,762, Cl. 354-187.000.

Rollin, Peter J.: *See—*
Hawthorne, Peter F.; and Rollin, Peter J., 4,281,035, Cl. 427-199.000.

Rolls-Royce Limited: *See—*
Savage, Philip, 4,280,357, Cl. 73-104.000.

Roman, Steven A., to Shell Oil Company. Oxyimino-substituted cyclopropanecarboxylate. 4,281,183, Cl. 562-506.000.

Romankiw, Lubomyr T.: *See—*
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., 4,281,057, Cl. 430-270.000.

Roos, Jan, to U.S. Philips Corporation. Magnetic strip domain memory system. 4,281,396, Cl. 365-29.000.

Roper Corporation: *See—*
Scanland, Joseph E., 4,280,319, Cl. 56-255.000.

Rosen, George, to Energistics, Inc. Planetary gear system and gears therefore. 4,280,376, Cl. 74-788.000.

Rosenberg, Ariel. Combined protective barrier and burglar alarm. 4,281,320, Cl. 340-545.000.

Rosenberg, Neil A., to Hewlett-Packard Company. Patient cable with distributed resistance protection in conductors. 4,280,507, Cl. 128-696.000.

Ross, Edgar A.: *See—*
Tatum, Odes D.; and Ross, Edgar A., 4,281,211, Cl. 174-36.000.

Ross, Joseph H.; and Hall, Richard J. Audio cable tester. 4,281,283, Cl. 324-51.000.

Rottmaier, Ludwig: *See—*
Dunwald, Willi; Lewalter, Jurgen; Merten, Rudolf; Rottmaier, Ludwig; Schulte, Bernhard; and Meyer, Karl-Heinrich, 4,281,095, Cl. 528-49.000.

Roussel Uclaf: *See—*
Humbert, Daniel; Clemence, Francois; and Dagnaux, Michele, 4,281,012, Cl. 424-278.000.
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,281,182, Cl. 562-506.000.

Roussel, Victor: *See—*
Corfa, Yves-Paul; Marchal, Paul; Roussel, Victor; and Vertut, Jean, 4,280,288, Cl. 37-54.000.

Rowe International, Inc.: *See—*
Mitchell, Robert P., 4,280,745, Cl. 312-323.000.

Rowley, Gerald L.: *See—*
Zuk, Robert F.; Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., 4,281,061, Cl. 435-7.000.

Rozner, Alexander G.; and Helms, Horace H., to United States of America, Navy. Molten metal-liquid explosive device. 4,280,409, Cl. 102-364.000.

Rudwick, Lawrence A. Motor and pedal driven bicycles. 4,280,581, Cl. 180-207.000.

Ruegg, Harvey L., Sr. Heat hugger. 4,280,474, Cl. 126-121.000.

Runciman, Susann I. C., to Runciman, Susann I. C.; and Thompson, John R. Constant feed device. 4,280,637, Cl. 222-39.000.

Rusche, Fredric. Leadless method and apparatus for driving piles. 4,280,772, Cl. 405-232.000.

Russell, Homer C.: *See—*
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.

Ruth, Charles W.: *See—*
Kruka, Vitold R.; and Ruth, Charles W., 4,281,402, Cl. 367-15.000.

Rutzen, Horst; Heidrich, Jochen; Bischoff, Martin; Kloubert, Udo; Waltenberger, Peter; and Wegener, Ingo, to Henkel Kommanditgesellschaft auf Aktien. Quaternary ammonium compounds, their preparation, and their use as softening agents. 4,281,196, Cl. 564-292.000.

Ryndak, Boleslaw: *See—*
Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, 4,281,074, Cl. 525-40.000.

Sadeski, Boleslaus J.: *See—*
Balch, James L.; Anderson, James E.; and Sadeski, Boleslaus J., 4,280,614, Cl. 198-425.000.

Saino, Tetsushi: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,281,180, Cl. 562-448.000.

St. Angelo, James E. Guard post for loading docks. 4,280,685, Cl. 256-1.000.

St. Clair, Terry L.: *See*—
United States of America, National Aeronautics and Space Administration; St. Clair, Terry L.; and Butler, John M., 4,281,102, Cl. 528-229.000.
St. Louis Conveyor Company, Inc.: *See*—
Herzog, Donald E.; and Thomas, Larry, 4,280,301, Cl. 51-5.00R.
Saito, Akinori: *See*—
Tanasawa, Yasusi; Saito, Akinori; and Kawamura, Kiyomi, 4,280,661, Cl. 239-409.000.
Saito, Takashi; Asai, Kiyotsugu; and Kawabata, Toshihiko, to Mitsui-Nisso Corporation. Thermosetting polyurethane resin and coating agent thereof prepared from at least two polyoxyalkylene polyols, blocking agent, chain-elongating agent, cross-linking agent and a mixture of diisocyanates. 4,280,944, Cl. 260-29.2TN.
Saito, Toranosuke; and Ohishi, Hiroyuki, to Sanko Kaihatsu Kagaku Kenkyusho. Flame retardants. 4,280,951, Cl. 260-45.80R.
Saitoh, Shinya: *See*—
Tomita, Tohru; Saitoh, Shinya; and Hirakata, Kazuo, 4,280,266, Cl. 29-241.000.
Sakaguchi, Haruo: *See*—
Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,281,416, Cl. 455-601.000.
Sakaguchi, Shigeya: *See*—
Ito, Hiroshi; and Sakaguchi, Shigeya, 4,280,841, Cl. 75-203.000.
Sakai Chemical Industry Co., Ltd.: *See*—
Abe, Kazunobu; and Nakatsuji, Tadao, 4,280,926, Cl. 252-430.000.
Sakai, Katsuo, to Ricoh Company, Ltd. Three color electrostatographic process. 4,281,051, Cl. 430-42.000.
Sakurai, Sadaaki: *See*—
Ugaji, Masana; Suyama, Hideo; Sakurai, Sadaaki; Yamaoka, Shigenori; Endo, Toshinaga; and Kusuhara, Akinobu, 4,281,223, Cl. 179-115.00R.
Sala, Franco, to Sala, Franco. Device for detecting the defrosting of frozen products. 4,280,361, Cl. 73-356.000.
Salk Institute for Biological Studies, The: *See*—
Guillemin, Roger C. L.; Lavielle, Solange; Brazeau, Paul E., Jr.; Ling, Nicholas C.; and Benoit, Robert A., 4,280,953, Cl. 260-112.50S.
Salmon, John K.; and Beazley, Dwight, to Otis Elevator Company. Self-refilling hydraulic actuator. 4,280,600, Cl. 188-312.000.
Salomon, Georges P. J., to S.A. Etablissements Francois Salomon & Fils. Safety bindings for skis. 4,280,714, Cl. 280-611.000.
Salter, John W.: *See*—
Johnson, Donald L.; Bond, John L.; Rogols, Saul; and Salter, John W., 4,280,718, Cl. 282-27.500.
Salzgitter Maschinen und Anlagen Aktiengesellschaft: *See*—
Schmid, Leo; and Kotyza, Heinrich, 4,280,572, Cl. 175-417.000.
Samsonite Corporation: *See*—
Burzen, Don N.; Workman, David E.; Bromley, Robert L.; Elles, Daniel G.; and Wilkuski, James E., 4,280,247, Cl. 16-112.000.
Sanders, Dieter: *See*—
Brokmann, Manfred; Sanders, Kurt; Sanders, Dieter; and Westhoff, Hermann, 4,280,548, Cl. 160-383.000.
Sanders, Kurt: *See*—
Brokmann, Manfred; Sanders, Kurt; Sanders, Dieter; and Westhoff, Hermann, 4,280,548, Cl. 160-383.000.
Sandoz, Inc.: *See*—
Hardtmann, Goetz E., 4,281,131, Cl. 546-90.000.
Sandoz Ltd.: *See*—
Baumann, Werner, 4,281,115, Cl. 542-441.000.
Sanko Kaihatsu Kagaku Kenkyusho: *See*—
Saito, Toranosuke; and Ohishi, Hiroyuki, 4,280,951, Cl. 260-45.80R.
Sanner, James W.; and Owen, Peter W., to Dow Chemical Company, The. Purification of 2-oxazolines. 4,281,137, Cl. 548-239.000.
Santer, J. Owen: *See*—
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, 4,280,938, Cl. 260-21.000.
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, 4,281,091, Cl. 525-518.000.
Santiago, Edgardo, to Owens-Illinois, Inc. Abrasion resistant coating for foamed plastic substrates. 4,281,040, Cl. 428-195.000.
Santos, Frank; and Santos, Larry E. Compact fire hose washer and winder. 4,280,672, Cl. 242-86.000.
Santos, Larry E.: *See*—
Santos, Frank; and Santos, Larry E., 4,280,672, Cl. 242-86.000.
Santy, James L. Universal splint. 4,280,490, Cl. 128-88.000.
Sanyo Chemical Industries, Ltd.: *See*—
Sugiura, Masakuzu; Kikutake, Junichiro; Yoshida, Masaru; and Kondo, Shigeharu, 4,280,992, Cl. 424-1.000.
Sanyo Electric Co., Ltd.: *See*—
Kuwano, Yukinori; Imai, Terutoyo; and Umetani, Masakazu, 4,281,208, Cl. 136-249.000.
Nishimura, Satoshi; Shimizu, Tetsuo; Sato, Kenichi; and Asano, Takehiko, 4,281,295, Cl. 333-14.000.
Ozawa, Toshiyuki, 4,281,259, Cl. 307-514.000.
Yoshii, Kazuhiro; and Kubota, Norikazu, 4,280,331, Cl. 62-148.000.
Sarns, Inc.: *See*—
Lampert, Seymour R., 4,280,495, Cl. 128-214.00E.
Sarrailh, Jean-Paul: *See*—
Lomenech, Herve; and Sarrailh, Jean-Paul, 4,280,720, Cl. 285-136.000.
Sartor, Mariano, to Nordica S.p.A. Ski boot. 4,280,286, Cl. 36-118.000.
Sasabe, Yukiyoshi: *See*—
Katayose, Shinji; Sasabe, Yukiyoshi; Yokota, Yoshiaki; Kuroki, Junsuke; and Torii, Shuuji, 4,280,411, Cl. 104-112.000.
Sasaki, Takashi: *See*—
Kishi, Kenichi; and Sasaki, Takashi, 4,281,059, Cl. 430-551.000.
Sato, Kazuhiro: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Sato, Kazuhiro; Umemoto, Masuo; Akiyama, Toshiyuki; and Izumita, Morishi, 4,281,338, Cl. 358-44.000.
Sato, Kenichi: *See*—
Nishimura, Satoshi; Shimizu, Tetsuo; Sato, Kenichi; and Asano, Takehiko, 4,281,295, Cl. 333-14.000.
Sato, Makoto: *See*—
Ohmori, Taiji; Tsuchiya, Yoshikazu; Sato, Makoto; Miyakawa, Yoshitaka; and Fujii, Etsuo, 4,280,740, Cl. 303-92.000.
Sato, Ryuichi: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,281,015, Cl. 424-287.000.
Satoh, Hiroshi: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,281,015, Cl. 424-287.000.
Sattler, Michael: *See*—
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,280,688, Cl. 266-245.000.
Savage, Philip, to Rolls-Royce Limited. Inspection of electrically non-conductive workpieces. 4,280,357, Cl. 73-104.000.
Savery, James W. Method of and apparatus for active electro-chemical water and similar environmental contaminant elimination in semiconductor and other electronic and electrical devices and the like. 4,280,885, Cl. 204-129.000.
Sawa, Toshio; Kubota, Masayoshi; Takahashi, Sankichi; and Kaneko, Toyohiko, to Hitachi, Ltd. Method for treatment of sewage. 4,280,886, Cl. 204-149.000.
Sawa, Tsuna; and Ishii, Yashunori, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray tube with cooled shield between target and rotor. 4,281,268, Cl. 313-60.000.
Sax, Hans. Bath aid. 4,280,234, Cl. 4-540.000.
Scalf, Daniel J.: *See*—
Kerr, Douglas M.; Crandall, Thomas L.; and Scalf, Daniel J., 4,280,413, Cl. 105-150.000.
Scanland, Joseph E., to Roper Corporation. Deck construction for rotary mower. 4,280,319, Cl. 56-255.000.
Scarborough, Bifford L., Jr. Apparatus for projecting enlarged video images. 4,281,353, Cl. 358-254.000.
Schafebook, Richard A.: *See*—
Chaconas, Peter C.; and Schafebook, Richard A., 4,280,776, Cl. 408-72.00R.
Schaffer, I. Lawrence. Solar heater. 4,280,483, Cl. 126-433.000.
Schanzer, Henry I.; and Stewart, Roger G., to RCA Corporation. Circuit for reducing the loading effect of an insulated-gate field-effect transistor (IGFET) on a signal source. 4,281,400, Cl. 365-203.000.
Scharenberg, William F., Jr.: *See*—
Stutz, David E.; Atterbury, Thomas; and Scharenberg, William F., Jr., 4,281,284, Cl. 324-58.00A.
Scheetz, Howard A.; and Gilles, Richard C., to Polymer Corporation, The. Melt processable UHMWPE. 4,281,070, Cl. 525-1.000.
Schering Aktiengesellschaft: *See*—
Nusslein, Ludwig; Baumert, Dietrich; and Pieroh, Ernst A., 4,281,121, Cl. 544-134.000.
Scherrer, Igor: *See*—
Besson, Rene; and Scherrer, Igor, 4,281,405, Cl. 368-66.000.
Schmid, Adolf: *See*—
Agricola, Manfred; Dietze, Klaus; Mayr-Stein, Horst; Reimer, Karl-Heinz; Reinhold, Andreas; Schmid, Adolf; and Schosnig, Johannes-Georg, 4,281,410, Cl. 370-110.000.
Schmid, Leo; and Kotyza, Heinrich, to Salzgitter Maschinen und Anlagen Aktiengesellschaft. Chisel for a percussive tool. 4,280,572, Cl. 175-417.000.
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, to Robert Bosch GmbH. Rotary cam drive for impact tool. 4,280,359, Cl. 73-123.000.
Schmidt, Nicholas F.: *See*—
Dhabhar, Dadi J.; Heyd, Allen; and Schmidt, Nicholas F., 4,280,936, Cl. 260-13.000.
Schmidt, Volker. Apparatus for cutting strips of material of varying lengths. 4,280,384, Cl. 83-234.000.
Schmidt, Werner, to Maschinenfabrik Rissen GmbH; and 4P Nicolaus Kempten GmbH. Cover for containers. 4,280,652, Cl. 229-43.000.
Schmitt, Frederick L.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,280,515, Cl. 131-276.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,280,933, Cl. 252-522.00R.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,281,177, Cl. 260-513.00R.
Schmitt, Susan M.: *See*—
Christensen, Burton G.; Guthikonda, Ravindra N.; Johnston, David B. R.; and Schmitt, Susan M., 4,281,002, Cl. 424-263.000.
Schneider, Fred; and Sirtl, Wolfgang, to Haussener, Ernst. Method of recovering and/or refining animal fats. 4,280,961, Cl. 260-412.800.
Schneider, Kenneth S. Method and apparatus for multiplex binary data communication. 4,281,409, Cl. 370-18.000.

Schoendube, Charles W., to General Electric Company. Electric bus bar assembly for polyphase distribution transformers. 4,281,306, Cl. 336-5.000.

Scholten, David L., to Brown & Williamson Tobacco Corporation. Apparatus for separating sand from botanical fines. 4,280,903, Cl. 209-469.000.

Schor, S. Allen, to Elmar Plastics, Inc. Winding core for magnetic tape adapted for stacking. 4,280,670, Cl. 242-68.500.

Schorwerth, Mathias, to Knorr-Bremse GmbH. Brake disc for railway vehicles. 4,280,597, Cl. 188-218.0XL.

Schosnig, Johannes-Georg: *See*—
Agricola, Manfred; Dietze, Klaus; Mayr-Stein, Horst; Reimer, Karl-Heinz; Reinhold, Andreas; Schmid, Adolf; and Schosnig, Johannes-Georg, 4,281,410, Cl. 370-110.000.

Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; Lehnert, Gunther; and Lindner, Christian, to Bayer Aktiengesellschaft. Process for the preparation of aliphatic-aromatic polycarbonates with diphenol carbonate end groups and their use for the preparation of high-molecular, segmented, aliphatic-aromatic polycarbonate elastomers which can be processed as thermoplastics. 4,281,101, Cl. 528-196.000.

Schreiber, Roland: *See*—
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,281,296, Cl. 333-165.000.
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,281,297, Cl. 333-165.000.

Schreiner, Friedrich, to Zahnradfabrik Friedrichshafen AG. Clutch assembly for gear-type transmission system. 4,280,370, Cl. 74-339.000.

Schreiner, Kurt; Jager, Horst; and Schwaebel, Richard, to Bayer Aktiengesellschaft. Phthalocyanine reactive dyestuffs. 4,280,956, Cl. 260-242.200.

Schubert, Hermann: *See*—
Bayer, Franz; Schubert, Hermann; and Kagerhuber, Franz, 4,280,552, Cl. 164-448.000.

Schulte, Bernhard: *See*—
Dunwald, Willi; Lewalter, Jurgen; Merten, Rudolf; Rottmaier, Ludwig; Schulte, Bernhard; and Meyer, Karl-Heinrich, 4,281,095, Cl. 528-49.000.

Schulte-Elte, Karl-Heinrich, to Firmenich SA. Cyclopentane derivatives useful as perfuming agents. 4,280,934, Cl. 252-522.00R.

Schultz, John, Jr.: *See*—
Borom, Marcus P.; and Schultz, John, Jr., 4,280,932, Cl. 252-521.000.

Schultz, Ron: *See*—
Grants, Valdis; Schultz, Ron; and McAdams, Timothy E., 4,281,392, Cl. 364-900.000.

Schulz, Johann G.; Stanulonis, John J.; and Wajert, William R., to Gulf Research & Development Company. Novel compositions of matter and process for utilizing same. 4,280,818, Cl. 44-56.000.

Schundehutte, Karl H.: *See*—
Berger-Lohr, Bernd; Schundehutte, Karl H.; and Soll, Manfred, 4,281,124, Cl. 544-208.000.

Schurr, Paul E.; and Day, Charles E., to Upjohn Company, The. Antiatherosclerotic use of khellin and khellinin. 4,281,013, Cl. 424-283.000.

Schuster, Samuel J. Roller electrode for use in apparatus for treating plastic film with high voltage corona discharge. 4,281,247, Cl. 250-324.000.

Schwaebel, Richard: *See*—
Schreiner, Kurt; Jager, Horst; and Schwaebel, Richard, 4,280,956, Cl. 260-242.200.

Schwartz, Herbert S. Apparatus for repairing laminated safety glass. 4,280,861, Cl. 156-382.000.

Schwing, Friedrich W.; and von Eckardstein, Karl-Ernst, to Friedrich Wilh. Schwing GmbH. Apparatus for distributing concrete, especially in the shuttering of gallery linings in mine and tunnel workings. 4,280,771, Cl. 405-150.000.

Schwolow, Gunter: *See*—
Rassmann, Christoph; Hauschopp, Alois; Schwolow, Gunter; and Huss, Horst, 4,280,733, Cl. 299-34.000.

Sciscione, Philip, to General Electric Company. Insulating support structure for an electric bus conductor. 4,281,213, Cl. 174-68.00B.

Seachman, Ned J., to Xerox Corporation. Self scanned photosensitive array. 4,281,254, Cl. 250-578.000.

Seige Corporation: *See*—
Nilsson, Jack E., Sr., 4,280,482, Cl. 126-430.000.

Seimiya, Motoo; and Nishida, Katsutoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of preparing silicon nitride. 4,280,989, Cl. 423-344.000.

Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, to Kokusai Denshin Denwa Co., Ltd. Light source system in an optical transmission repeater. 4,281,416, Cl. 455-601.000.

Senoo, Takanori: *See*—
Wada, Ryoichi; Tsuchiya, Mitsuharu; Odagi, Kanji; and Senoo, Takanori, 4,281,355, Cl. 360-32.000.

Sensenbrenner, Ronald R.: *See*—
Gardner, Jeffrey M.; Sensenbrenner, Ronald R.; and Nelson, Bennie C., Jr., 4,280,650, Cl. 229-15.000.

Sensormatic Electronics Corporation: *See*—
Narlow, Douglas A.; and Farrar, James G., 4,281,321, Cl. 340-572.000.

Serebryannikov, Albert S.: *See*—
Onikov, Eduard A.; Galperin, Alexandr L.; Serebryannikov, Albert S.; Zabotin, Alexandr A.; and Loschilin, Evgeny D., 4,280,537, Cl. 139-436.000.

Seuferling, John G.: *See*—
Wheeler, Norton C., Jr.; Seuferling, John G.; and Pennila, Simo A. O., 4,280,801, Cl. 425-113.000.

Seymour, Samuel L., to PPG Industries, Inc. Shaping glass sheets by drop forming with pressure assist. 4,280,828, Cl. 65-106.000.

Sguazzi, Angelo, to Bracco, Dario. Oryotherapy apparatus. 4,280,499, Cl. 128-303.100.

Shade, Ray W., to General Electric Company. Process for treating silicon particles within a silicone reactor system. 4,281,149, Cl. 556-472.000.

Shah, Syed M.; and Tu, Hosheng, to UOP Inc. Removal of contaminating metals from FCC catalyst by NH_4 citrate chelates. 4,280,897, Cl. 208-113.000.

Shahar, Moshe. Shuttering. 4,280,677, Cl. 249-43.000.

Shair, Irwin, to Dennison Manufacturing Company. Variable rate ink jet printing. 4,281,331, Cl. 346-75.000.

Shanks, Scott B.: *See*—
Karr, Dieter E.; and Shanks, Scott B., 4,280,512, Cl. 128-785.000.

Shannon, Gilbert E.; and Friesorger, David F., to General Motors Corporation. Rotatable flexible drive shaft with noise abatement. 4,280,338, Cl. 64-2.00R.

Sharma, Dhiraj K.: *See*—
Ahuja, Sudhir R.; and Sharma, Dhiraj K., 4,281,381, Cl. 364-200.000.

Sharp Kabushiki Kaisha: *See*—
Nonomura, Keisaku; Takamatsu, Toshiaki; Uede, Hisashi; and Wada, Tomio, 4,281,324, Cl. 340-784.000.
Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, 4,280,754, Cl. 350-357.000.

Shaw, Arthur R., to General Motors Corporation. Hydraulic brake booster. 4,280,395, Cl. 91-47.000.

Shaw, Harry N., to Protectoseal Co., The. Dually-operated tank car bottom unloading valve. 4,280,679, Cl. 251-144.000.

Shaw, Wilfrid G.; Paparizos, Christos; and Callahan, James L., to Standard Oil Company. Attrition resistant-higher active component fluid bed catalysts. 4,280,929, Cl. 252-439.000.

Shea, Michael H.: *See*—
Gaal, Stephen L.; Gant, Gary L.; Muntean, George L.; Reiners, Neville H.; and Shea, Michael H., 4,280,659, Cl. 239-124.000.

Shell Oil Company: *See*—
Kiovsky, Thomas E., 4,280,458, Cl. 123-198.00A.
Kruka, Vitold R.; and Ruth, Charles W., 4,281,402, Cl. 367-15.000.
Richards, Harry F.; and Carlson, Douglas C., 4,280,916, Cl. 252-33.400.
Roman, Steven A., 4,281,183, Cl. 562-506.000.
Stewart, Thomas L., 4,280,356, Cl. 73-40.50R.
Syrier, Johannes L. M.; and Van Berkel, Johannes, 4,281,203, Cl. 568-303.000.
Ten Haken, Pieter; Webb, Shirley B.; and Smith, Graham C., 4,281,134, Cl. 546-334.000.

Shen, Hsiang-Sheng; Plischke, LeMoyne W.; Baggett, William M.; and Osborne, Franklin T., to Monsanto Company. Process for manufacturing nonwoven fabrics composed of crimped filaments. 4,280,860, Cl. 156-167.000.

Shepherd, Robert G., to American Cyanamid Company. Novel 4-[(carboxyl- and sulfamyl-substituted alkyl)-amino]benzoic acids and analogs. 4,281,018, Cl. 424-310.000.

Shepherd, Robert G., to American Cyanamid Company. 4-[(Unsaturated or cyclopropylated alkyl)amino]phenyl compounds useful as hypolipidemic and antiatherosclerotic agents. 4,281,019, Cl. 424-330.000.

Sherman, Victor L. Source of energy and a method of generating energy. 4,281,255, Cl. 290-1.00R.

Sheth, Kalapi D., to Corning Glass Works. Apparatus for controlling internal pressure of a bait tube. 4,280,829, Cl. 65-158.000.

Shetty, Bola V.; and Airey, John E., to Purdue Frederick Company, The. Antimicrobial bis-benzimidazale compounds. 4,281,138, Cl. 548-306.000.

Shibata, Hiroshi; Iwasaki, Hideo; and Yamada, Kunio, to VLSI Technology Research Association. Method of manufacturing a semiconductor device having conductive and insulating portions formed of a common material utilizing selective oxidation and angled ion-implantation. 4,280,854, Cl. 148-1.500.

Shibazaki, Kenji: *See*—
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,280,763, Cl. 355-14.00R.

Shibue, Yuji: *See*—
Yamada, Yasunori; and Shibue, Yuji, 4,280,987, Cl. 423-119.000.

Shibuya Kogyo Company, Ltd.: *See*—
Nagano, Yasuaki, 4,280,612, Cl. 198-379.000.

Shibuya, Yoshikazu: *See*—
Yoshioka, Akiyoshi; Shibuya, Yoshikazu; and Nakanishi, Ioichiro, 4,281,209, Cl. 174-14.00R.

Shikano, Hiroshi; and Iwata, Toshihiko. Refractory brick for molding molten steel. 4,280,844, Cl. 106-56.000.

Shimanaka, Hiroshi: *See*—
Inokuti, Yukio; Shimizu, Yoh; and Shimanaka, Hiroshi, 4,280,856, Cl. 148-111.000.

Shimizu, Tetsuo: *See*—
Nishimura, Satoshi; Shimizu, Tetsuo; Sato, Kenichi; and Asano, Takehiko, 4,281,295, Cl. 333-14.000.

Shimizu, Yoh: *See*—
Inokuti, Yukio; Shimizu, Yoh; and Shimanaka, Hiroshi, 4,280,856, Cl. 148-111.000.

Shimoyama, Yoshiaki: *See—*
Shiozaki, Morio; Kawashima, Mitsuaki; Shimoyama, Yoshiaki; and Ishihara, Nobuoki, 4,280,837, Cl. 75-54.000.

Shimozato, Yasuyuki: *See—*
Ikeda, Hiroharu; and Shimozato, Yasuyuki, 4,281,085, Cl. 525-326.000.

Shimura, Takeo: *See—*
Moriguchi, Hiroyuki; Haneda, Satoshi; Kaneko, Tadashi; Itoh, Akira; Shimura, Takeo; Matsumoto, Masanori; and Nomori, Hiroyuki, 4,281,055, Cl. 430-60.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Noyori, Ryoji, 4,281,148, Cl. 556-470.000.

Shin-Etsu Polymer Co., Ltd.: *See—*
Noma, Hideyuki; and Nakano, Takaaki, 4,281,238, Cl. 219-535.000.

Shindelka, Frank A. Protective gun sling. 4,280,644, Cl. 224-149.000.

Shindome, Mamoru; Yanagita, Takanori; Nakamura, Takanori; and Otsuji, Hiroyuki, to Shindome, Mamoru. Apparatus for treating waste material while preventing smelt-water explosions. 4,280,982, Cl. 422-185.000.

Shinohara, Mitsuharu: *See—*
Nakagawa, Sadayoshi; and Shinohara, Mitsuharu, 4,281,222, Cl. 179-111.00E.

Shiozaki, Morio; Kawashima, Mitsuaki; Shimoyama, Yoshiaki; and Ishihara, Nobuoki, to Nippon Steel Corporation. Method for continuously casting slab for manufacturing grain-oriented electrical steel sheet and strip. 4,280,837, Cl. 75-54.000.

Shirai, Tadashi: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,281,180, Cl. 562-448.000.

Shizuya, Osamu, to Matsushita Electric Industrial Co., Ltd. Television signal receiving apparatus. 4,281,348, Cl. 358-188.000.

Shlykov, Gennady N.; Dyachkov, Vasily M.; Zhestkov, Vitaly I.; and Tikhonov, Valentin N. Double-apron drawing mechanism. 4,280,252, Cl. 19-255.000.

Shop-Vac Corporation: *See—*
Hiester, Kenneth R., 4,280,245, Cl. 15-326.000.

Shores, Marvin W., to General Dynamics, Pomona Division. Slip ring assembly. 4,281,328, Cl. 343-763.000.

Showa Aluminum Industries K.K.: *See—*
Yamada, Yasunori; and Shibue, Yuji, 4,280,987, Cl. 423-119.000.

Showa Sangyo Co., Ltd.: *See—*
Watanabe, Haruo; Watanabe, Mutsuhito; Arima, Takao; and Yamada, Kosei, 4,280,962, Cl. 260-424.000.

Shreve, James S., to United States of America, Army. Solid-medium coherent optical processor. 4,280,752, Cl. 350-162.0SF.

Shriver, Joe E.: *See—*
Lindblom, Curtis H.; and Shriver, Joe E., 4,280,317, Cl. 56-15.600.

Sica, Louis, Jr.; and Szu, Hwaling H., to United States of America, Navy. Phase-conjugate interferometer. 4,280,764, Cl. 356-35.500.

Sidi, Henri; and Hughes, William G., to Tenneco Chemicals, Inc. Process for the production of benzoic acid from process residues that contain benzyl benzoate. 4,281,178, Cl. 562-412.000.

Siebentritt, Carl R.: *See—*
Kronenberg, Stanley; Siebentritt, Carl R.; and Van Gorden, Harry, 4,281,250, Cl. 250-377.000.

Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Insecticidal N-methyl-N-(benzene sulfonic acid methylamide-N′-sulfenyl)-carbamic acid oxime esters. 4,281,011, Cl. 424-277.000.

Siemens Aktiengesellschaft: *See—*
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,281,296, Cl. 333-165.000.
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,281,297, Cl. 333-165.000.
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Munchow, Eberhard; Mourick, Paul; and Strop, Jurgen, 4,281,376, Cl. 363-50.000.

Siemens-Alris AG: *See—*
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Siems, Lee E.; and Porter, James A., to Litton Resources Systems, Inc. Seismic data recording method and apparatus. 4,281,403, Cl. 367-76.000.

Signatron, Inc.: *See—*
Bonn, Jerrold L.; Mahoney, Paul F.; and Monsen, Peter, 4,281,411, Cl. 375-14.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-6a-carba-PGI_2 sulfonylamides. 4,281,150, Cl. 560-10.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-11-deoxy-19-oxo-PGF_2 compounds. 4,281,154, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-11-hydroxymethyl-19-oxo-PGF_2 compounds. 4,281,155, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-11-hydroxymethyl-19-oxo-PGE_2 compounds. 4,281,156, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-11-hydroxymethyl-inter-oxa-19-oxo-PGF_1 compounds. 4,281,157, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-inter-oxa-19-oxo-PGF_1 compounds. 4,281,158, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-11-deoxy-19-oxo-PGF_1 compounds. 4,281,159, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-19-oxo-PGE_1 compounds. 4,281,160, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-19-oxo-PGF_1 compounds. 4,281,161, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-11-deoxy-11-hydroxymethyl-19-oxo-PGF_1 compounds. 4,281,162, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-11-hydroxymethyl-19-oxo-PGE_1 compounds. 4,281,163, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-11-hydroxymethyl-19-oxo-PGF_1 compounds. 4,281,164, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-19-oxo-PGF_2 compounds. 4,281,165, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-11-deoxy-11-hydroxymethyl-inter-oxa-19-PGF_1 compounds. 4,281,166, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-inter-oxa-19-oxo-PGF_1 compounds. 4,281,167, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-inter-oxa-19-oxo-PGE_1 compounds. 4,281,168, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 9-Deoxy-9-methylene-11-deoxy-inter-oxa-19-oxo-PGF_1 compounds. 4,281,169, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-PG amides. 4,281,191, Cl. 564-189.000.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19-hydroxy-6-oxo-PGF_1 compounds. 4,281,205, Cl. 568-380.000.

Sih, John C.: *See—*
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Silfvast, William T., to Bell Telephone Laboratories, Incorporated. Implantation of vaporized material on melted substrates. 4,281,030, Cl. 427-42.000.

Silver, Frederick H.: *See—*
Yannas, Ioannis V.; Gordon, Philip L.; Huang, Chor; Silver, Frederick H.; and Burke, John F., 4,280,954, Cl. 260-123.700.

Silvestri, Giancarlo. Vented fuel tank cap. 4,280,529, Cl. 137-493.300.

Simmons, Walter J.: *See—*
Bivens, Joseph R.; Lyerly, William M.; and Simmons, Walter J., 4,280,943, Cl. 260-29.20E.

Simon, David J.; and Costello, Edward C., to Singer Company, The. Successive approximation S/D converter with inherent quantization error centering. 4,281,316, Cl. 340-347.0SY.

Simonton, Robert D., to Dale Products, Inc. Synchronized drive for heat sealing roller anvils. 4,280,865, Cl. 156-538.000.

Sims, Marc. Liquid carbon dioxide extraction of pyrethrins. 4,281,171, Cl. 560-124.000.

Singenberger, Emil; and Wilhelm, Heinz, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Marine firing weapon. 4,280,394, Cl. 89-37.00A.

Singer Company, The: *See—*
Cook, Albert N.; and Kornatowski, Boleslaw, 4,281,310, Cl. 338-108.000.
Goncharko, Michael, 4,280,423, Cl. 112-158.00E.
Haas, Robert N., 4,280,285, Cl. 434-30.000.
Simon, David J.; and Costello, Edward C., 4,281,316, Cl. 340-347.0SY.

Singerman, Gary M.: *See—*
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Singh, Prithipal: *See—*
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Single Buoy Moorings, Inc.: *See—*
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Siniscal, Paul D.; Hebert, David L.; and Benzing, J. Paige, to Rockwell International Corporation. Bundle entry device. 4,280,615, Cl. 198-470.000.

Sioli, Giancarlo: *See—*
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Sirtl, Wolfgang: *See—*
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Skatsche, Othmar: *See—*
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SKF Industries, Inc.: *See—*
Fernlund, Ingemar, 4,280,743, Cl. 308-217.000.

Skinner, Robert T. J., to Lucas Industries Limited. Engine installations. 4,280,454, Cl. 123-195.00A.

Slaughter, Bobby L., to Anchor Brush Company, Inc. Container for nail polish or the like. 4,280,629, Cl. 215-1.00C.

Sliger, Boyd P., to Robertshaw Controls Company. Thermostat construction with an annular sealing member. 4,280,654, Cl. 236-34.500.

Slone, Keith W. Three dimensional game with political theme. 4,280,703, Cl. 273-241.000.

Small, Hamish; and Solc, Jitka K., to Dow Chemical Company, The. Method for fractionating soluble polymers and colloidal particles. 4,280,923, Cl. 252-323.000.

Smeets, Andreas L. M. T. Gas carburettor to be mounted on a petrol carburettor of a combustion engine. 4,280,968, Cl. 261-16.000.

Smejkal, Helmut: *See—*
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Smilgys, Bruno S., to Veeder Industries Inc. Fuel pump counter transfer mechanism. 4,281,240, Cl. 235-139.00R.

Smith, Charles W., Jr.; Zimmerman, Franz X.; and Walker, William H., to Autoclave Engineers, Inc. Autoclave furnace with cooling system. 4,280,807, Cl. 432-205.000.

Smith, Chester L.: *See*—
Donnally, William; and Smith, Chester L., 4,280,355, Cl. 73-5.000.
Smith, Donald E.: *See*—
Wissel, Frank A.; Smith, Donald E.; Martinet, Robert L.; Dapper, Mark J.; and Kiliman, Douglas A., 4,281,412, Cl. 375-86.000.
Smith, Graham C.: *See*—
Ten Haken, Pieter; Webb, Shirley B.; and Smith, Graham C., 4,281,134, Cl. 546-334.000.
Smith International, Inc.: *See*—
Justman, Daniel B., 4,280,742, Cl. 308-4.00A.
Smith, J. Thomas; Quackenbush, Carr L. W.; and Reid, F. Joseph, to GTE Laboratories, Incorporated. S13N4 Having high temperature strength and method. 4,280,850, Cl. 106-73.200.
Smith, James L., Jr. Low profile tension mounted load cell industrial scale. 4,280,576, Cl. 177-126.000.
Smith, Kent G. Pacing timer mounting arrangement. 4,281,389, Cl. 364-569.000.
Smith, Steven R.: *See*—
Coon, Michael D.; Grace, Martin K.; and Smith, Steven R., 4,281,239, Cl. 235-92.0GA.
Smolen, Victor F.: *See*—
Cosgrove, Robert J., Jr.; and Smolen, Victor F., 4,280,494, Cl. 128-213.00R.
Snoble, Karel A. J., to Dow Chemical Company, The. Catalytic process for converting oxazolidinones to their corresponding aminoalcohols. 4,281,200, Cl. 564-487.000.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See*—
Caldarella, Riccardo; and Nobile, Riccardo, 4,281,292, Cl. 329-50.000.
DelBello, Vincenzo, 4,281,221, Cl. 179-111.00R.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See*—
Ludwig, Guy, 4,280,251, Cl. 19-105.000.
Societe Anonyme Automobiles Citroen: *See*—
Gcguet, Jean A., 4,280,340, Cl. 64-21.000.
S.A. Etablissements Francois Salomon & Fils: *See*—
Salomon, Georges P. J., 4,280,714, Cl. 280-611.000.
s.a. Texaco Belgium n.v.: *See*—
Hermans, Johny C., 4,281,128, Cl. 544-337.000.
Societe Francaise d'Equipements pour la Navigatior Aerienne (S.F.E.N.A.): *See*—
Lebrun, Jean-Louis, 4,281,383, Cl. 364-428.000.
Societe Lignes Telegraphics et Telephoniques: *See*—
Escher, Balint; Prince, Dominique; and Vasseux, Jean, 4,280,270, Cl. 29-570.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See*—
Arliguie, Jean-Claude M.; Buisson, Marc F. B.; and Caruel, Jacques E. J., 4,280,324, Cl. 60-261.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Lomenech, Herve; and Sarrailh, Jean-Paul, 4,280,720, Cl. 285-136.000.
Societe SATELEC: *See*—
Mabille, Pierre, 4,281,373, Cl. 363-21.000.
Soderman, Donald A.: *See*—
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Soderstrom, Sigvard V., to Aktiebolaget Electrolux. Waste water conveyance apparatus. 4,280,528, Cl. 137-408.000.
Soejima, Shigeo: *See*—
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Sofen, Morris B. Device for supporting and storing the mainsail of a sailboat on the boom thereof. 4,280,431, Cl. 114-105.000.
Solarek, Daniel B.: *See*—
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Solc, Jitka K.: *See*—
Small, Hamish; and Solc, Jitka K., 4,280,923, Cl. 252-323.000.
Soll, Manfred: *See*—
Berger-Lohr, Bernd; Schundehutte, Karl H.; and Soll, Manfred, 4,281,124, Cl. 544-208.000.
Somartec S.A., Firma: *See*—
Rodler, Hans, 4,280,504, Cl. 128-420.00A.
Sommer, Karlheinz; and Sonntag, Alois, to Licentia Patent-Verwaltungs-G.m.b.H. Thyristor element with short turn-off time and method for producing such element. 4,281,336, Cl. 357-38.000.
Sonntag, Alois: *See*—
Sommer, Karlheinz; and Sonntag, Alois, 4,281,336, Cl. 357-38.000.
Sony Corporation: *See*—
Mitamura, Ichiro; Isono, Katsuo; and Hosono, Takashi, 4,281,340, Cl. 358-67.000.
Nakamura, Takashi, 4,281,337, Cl. 358-29.000.
Ugaji, Masana; Suyama, Hideo; Sakurai, Sadaaki; Yamaoka, Shigenori; Endo, Toshinaga; and Kusuhara, Akinobu, 4,281,223, Cl. 179-115.00R.
Sorel, Yvon J.: *See*—
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Sousa, Frank E., to R. C. Sanders Technology Systems, Inc. Magnetic disk memory. 4,281,356, Cl. 360-45.000.
Southern Weaving Company: *See*—
Tatum, Odes D.; and Ross, Edgar A., 4,281,211, Cl. 174-36.000.
Sparkomatic Corporation: *See*—
Castagna, John F., 4,281,224, Cl. 179-146.00R.
Spaziante, Placido; Sioli, Giancarlo; and Giuffre, Luigi, to Fondazione deNora. Monochloroacetic acid process. 4,281,184, Cl. 562-603.000.
Spector, George: *See*—
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Speights, Junius L.: *See*—
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Speir, Donald W.: *See*—
Wooten, William H., Jr.; and Speir, Donald W., 4,280,660, Cl. 239-265.350.
Spence, Gavin G.: *See*—
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Sperry Corporation: *See*—
Eggers, Edward T., 4,280,320, Cl. 56-341.000.
Koch, Earl E., 4,280,318, Cl. 56-221.000.
Lindblom, Curtis H.; and Shriver, Joe E., 4,280,317, Cl. 56-15.600.
Spilsbury, Thomas W., 4,281,272, Cl. 315-1.000.
Spilsbury, Thomas W., to Sperry Corporation. High voltage switching power supply for penetration cathode ray displays. 4,281,272, Cl. 315-1.000.
Spirig, Ernst. Dirt collecting floor mat apparatus. 4,280,244, Cl. 15-97.00R.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 6-Hydroxy-2,6-dimethylheptanal, organoleptic uses thereof and processes for preparing the same. 4,281,177, Cl. 260-513.00R.
Sprenger, Gerald E. Structure and process for reclaiming heat from charcoal production facility. 4,280,878, Cl. 202-93.000.
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Braestrup, Claus; and Squires, Richard F., 4,280,993, Cl. 424-1.000.
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Staclean Diffuser Company: *See*—
Johnson, Allen S., Jr., 4,280,826, Cl. 55-302.000.
Staerzl, Richard E., to Brunswick Corporation. Throttle control for an electronic fuel-injection control circuit. 4,280,465, Cl. 123-494.000.
Stambaugh, Edgel P.: *See*—
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Standard Oil Company: *See*—
Shaw, Wilfrid G.; Paparizos, Christos; and Callahan, James L., 4,280,929, Cl. 252-439.000.
Standard Oil Company (Indiana): *See*—
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Tatterson, David F.; and Vasalos, Iacovos A., 4,280,898, Cl. 208-119.000.
Standard-Thomson Corporation: *See*—
Duprez, Wayne R.; and Wong, Backman, 4,280,655, Cl. 236-34.500.
Standardgraph Filler & Fiebig GmbH: *See*—
Koelichen, Harald; and Deutsch, Adolf, 4,280,277, Cl. 33-23.00D.
Stant Inc.: *See*—
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Evans, John H., 4,280,347, Cl. 70-165.000.
Stanulonis, John J.: *See*—
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Stauffer Chemical Company: *See*—
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Mirviss, Stanley B.; and Giolito, Silvio L., 4,280,945, Cl. 260-30.60R.
Steelman, Carrol D.; Chambers, Doyle M.; and Andis, Michael D., to Louisiana State University Board of Supervisors. Insecticidal process utilizing certain uracils. 4,280,999, Cl. 424-251.000.
Stegens, Ronald E., to Communications Satellite Corporation. Quasi-elliptic function microstrip interdigital filter. 4,281,302, Cl. 333-204.000.
Stein Industrie: *See*—
Marjollet, Jacques; Tondeur, Gerard; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,280,825, Cl. 55-203.000.
Stein, Paul. Maternity clothing garment. 4,280,229, Cl. 2-221.000.
Stenehjem, Jerome C.; and Jacobsen, Stephen C. Product for simulating a human body part. 4,280,695, Cl. 272-8.00N.
Stensland, Leif: *See*—
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Sterling Drug Inc.: *See*—
Clarke, Robert L.; and Daum, Sol J., 4,281,130, Cl. 546-63.000.
Stevens, Richard; Mitchell, Richard F.; and White, Philip D., to U.S. Philips Corporation. Acoustic wave devices. 4,281,301, Cl. 333-195.000.
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Stewart, John K., to Canron Corp. Tie plate conveying and orientating system. 4,280,613, Cl. 198-406.000.
Stewart, Roger G.: *See*—
Schanzer, Henry I.; and Stewart, Roger G., 4,281,400, Cl. 365-203.000.
Stewart, Thomas L., to Shell Oil Company. Pipeline leak detection. 4,280,356, Cl. 73-40.50R.
Stickford, George H.: *See*—
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Stieg, Robert W., to Mack Trucks, Inc. Automatic differential control apparatus. 4,280,583, Cl. 180-250.000.
Stiles, James A. R.: *See*—
Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus, 4,281,048, Cl. 429-218.000.
Stockman, Richard F., to Air Preheater Company, Inc., The. Heat tube. 4,280,554, Cl. 165-11.00R.
Stoeckigt, Dieter; Kiessling, Dieter; Perner, Johannes; Trieselt, Wolfgang; and Trapp, Horst, to BASF Aktiengesellschaft. Detergents and cleansers containing oxyalkylated alcohols as biodegradable, low-foam surfactants. 4,280,919, Cl. 252-135.000.
Stoll, Kurt. Piston rod support. 4,280,741, Cl. 308-3.500.
Stout Industries, Inc.: *See*—
Eckberg, Keith S., II, 4,280,294, Cl. 40-606.000.
Strange, Donald R.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,281,382, Cl. 364-414.000.
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, to Monsanto Company. High solids air-drying coating compositions. 4,280,938, Cl. 260-21.000.
Strazik, William F.; LeBlanc, John R.; and Santer, J. Owen, to Monsanto Company. Unsaturated melamine condensates. 4,281,091, Cl. 525-518.000.
Strobele, Caljon H., to BASF Aktiengesellschaft. Complementary pre-emphasis and de-emphasis circuits for a video signal transfer channel. 4,281,346, Cl. 358-166.000.
Strolle, Clifford H.; and Thornley, Glenn D., to Du Pont de Nemours, E. I., and Company. High-solids polyurethane enamel coating composition. 4,281,078, Cl. 525-131.000.
Stroman, Fritz: *See*—
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Strop, Jurgen: *See*—
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Struble, Glenn E., to Diamond International Corporation. Method of folding and securing a box cover. 4,280,810, Cl. 493-356.000.
Struve, Hans-Dirk; Hess, Jurgen; and Vysiotis, Theodor, to Robert Bosch GmbH. Compressor with guide baffles and gas-permeable material separating means. 4,280,799, Cl. 418-97.000.
Stuck, Matthew A., to Modern Mfg. Co., Inc. Device for packaging elongated articles. 4,280,314, Cl. 53-241.000.
Stuemky, Robert E., to Gates Rubber Company, The. Torque transfer device for flexible shaft couplings. 4,280,339, Cl. 64-9.00R.
Stumpf, Gunter O. Air cushion table for transporting layers of laminar material, e.g. layers of fabric. 4,280,782, Cl. 414-676.000.
Stuntz, Gordon F.; and Bearden, Roby, to Exxon Research & Engineering Co. Passivation of cracking catalysts. 4,280,895, Cl. 208-113.000.
Stuntz, Gordon F.: *See*—
Bearden, Roby; and Stuntz, Gordon F., 4,280,896, Cl. 208-113.000.
Sturm, Budd H.: *See*—
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Stutz, David E.; Atterbury, Thomas; and Scharenberg, William F., Jr., to Transmet Corporation. Method and apparatus for electrically contacting a material specimen to the conductors of a coaxial cable. 4,281,284, Cl. 324-58.00A.
Suami, Tetsuo. Neamine derivatives and process for preparing the same. 4,281,107, Cl. 536-17.00R.
Subramanian, Kohur N.; Glaum, Gerald V.; and Walli, Einar, to International Nickel Co., Inc., The. Recovery of nickel and cobalt from leach slurries. 4,280,988, Cl. 423-140.000.
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Tupitsyn, Konstantin K. Rock-breaking tool for percussive-action machines. 4,280,573, Cl. 175-418.000.
Suga, Michihisa: *See*—
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Sugiura, Masakuzu; Kikutake, Junichiro; Yoshida, Masaru; and Kondo, Shigeharu, to Sanyo Chemical Industries, Ltd. Immunologically active substance-glass conjugates, process for producing the same and diagnostic reagents containing the same. 4,280,992, Cl. 424-1.000.
Sulzmann, Donna J. Infant nursing garment. 4,280,228, Cl. 2-104.000.
Sumi, Takehiko; Oshige, Yoshinobu; Koike, Yoshio; and Matsumoto, Kazuya, to Kyoraku Co., Ltd. Multi-layer extruded article. 4,281,045, Cl. 428-516.000.
Sumida, Seizo: *See*—
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Sumitomo Chemical Company, Limited: *See*—
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Sumitomo Metal Industries, Ltd.: *See*—
Marukawa, Katsukiyo; Yamazaki, Isao; Anezaki, Syoji; and Kajimoto, Tsutomu, 4,280,838, Cl. 75-60.000.
Sun Visors, Inc.: *See*—
Turner, Joseph D., 4,280,730, Cl. 296-97.00G.
Sunbeam Corporation: *See*—
Berenson, Allen V., 4,281,237, Cl. 219-511.000.
Narayan, Raichur S., 4,281,034, Cl. 427-191.000.
Sunds Defibrator Aktiebolag: *See*—
Hoglund, Hans E.; and Peterson, Per V., 4,280,868, Cl. 162-28.000.
Suntemp Industries, Inc.: *See*—
Marini, Thomas O., 4,280,269, Cl. 29-526.00R.
Suntime, Inc.: *See*—
Cooper, George H., 4,280,556, Cl. 165-76.000.
Surface Systems, Inc.: *See*—
Briggs, Donald E., 4,281,286, Cl. 324-61.00R.
Sutterfield, F. Dexter: *See*—
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Suyama, Hideo: *See*—
Ugaji, Masana; Suyama, Hideo; Sakurai, Sadaaki; Yamaoka, Shigenori; Endo, Toshinaga; and Kusuhara, Akinobu, 4,281,223, Cl. 179-115.00R.
Suzuki, Go, to NGK Insulators, Ltd. Method of working ceramic green sheet. 4,280,977, Cl. 264-153.000.
Suzuki, Masao: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,281,180, Cl. 562-448.000.
Suzuki, Osamu; Jigami, Yoshifumi; Nakasato, Satoshi; and Hashimoto, Tetsutaro, to Agency of Industrial Science and Technology, The. Process for producing lipids having a high linoleic acid content. 4,281,064, Cl. 435-134.000.
Suzuki, Ryo; Asano, Atsushi; Takeshita, Masatoshi; and Takeuchi, Teruaki, to Hitachi, Ltd. Magnetic bubble memory device. 4,281,395, Cl. 365-15.000.
Suzuki, Ryoichi: *See*—
Ogawa, Yukio; Suzuki, Ryoichi; Kinoshita, Takao; and Uchiyama, Takashi, 4,280,761, Cl. 354-29.000.
Suzuki, Yasoji: *See*—
Egawa, Hideharu; Matsuki, Koji; and Suzuki, Yasoji, 4,280,272, Cl. 29-571.000.
Svensson, Lennart. Lintel. 4,280,308, Cl. 52-98.000.
Swaine, James W., Jr.: *See*—
Bean, Samuel L.; Swaine, James W., Jr.; and Crawford, Paul R., 4,280,553, Cl. 165-1.000.
Swan, Larry G., to Motor Wheel Corporation. Method of manufacturing wheel discs. 4,280,426, Cl. 113-116.00D.
Swanson, Alfred B. Elbow prosthesis. 4,280,231, Cl. 3-1.910.
Swanson, Mervin D. Chimney heat economizer. 4,280,656, Cl. 237-55.000.
Swanson, Wilbur M. Carburetor. 4,280,969, Cl. 261-62.000.
Swiecicki, Z. Alexander, to Pullman Incorporated. Method of processing sponge iron. 4,280,840, Cl. 75-43.000.
Sydansk, R. D., to Marathon Oil Company. Potassium hydroxide clay stabilization process. 4,280,560, Cl. 166-305.00R.
Sykes, Arie B., Jr. Solar heat collector. 4,280,479, Cl. 126-426.000.
Syrier, Johannes L. M.; and Van Berkel, Johannes, to Shell Oil Company. (Cyclopropyl)vinyl alkyl ether derivatives. 4,281,203, Cl. 568-303.000.
Syva Company: *See*—
Lin, Cheng-I; and Singh, Prithipal, 4,281,065, Cl. 435-188.000.
Zuk, Robert F.; Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., 4,281,061, Cl. 435-7.000.
Szekely, Istvan; and Lovasz nee Gaspar, Marianna, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for the preparation of pyrethrins and analogues thereof and insecticidal compositions containing the same. 4,281,170, Cl. 560-124.000.
Szente, Andre: *See*—
Fischli, Albert E.; and Szente, Andre, 4,281,188, Cl. 564-51.000.
Szonntagh, Eugene L., to Honeywell Inc. Method and apparatus for sonic separation and analysis of components of a fluid mixture. 4,280,823, Cl. 55-15.000.
Szonntagh, Eugene L., to Honeywell Inc. Solid state ion responsive and reference electrodes. 4,280,889, Cl. 204-195.00F.
Szu, Hwaling H.: *See*—
Sica, Louis, Jr.; and Szu, Hwaling H., 4,280,764, Cl. 356-35.500.
Taciuk, William, to Alberta Oil Sands Technology and Research Authority. Apparatus and process for recovery of hydrocarbons from inorganic host materials. 4,280,879, Cl. 202-100.000.
Takabayashi, Katsuyuki: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,281,181, Cl. 562-453.000.
Takagi, Toshinori; Morimoto, Kiyoshi; and Watanabe, Hiroshi. Method of coating with a stoichiometric compound. 4,281,029, Cl. 427-38.000.
Takahashi, Kenji; Nagahara, Shusaku; Sato, Kazuhiro; Umemoto, Masuo; Akiyama, Toshiyuki; and Izumita, Morishi, to Hitachi, Ltd. Solid state color imaging apparatus. 4,281,338, Cl. 358-44.000.
Takahashi, Sankichi: *See*—
Sawa, Toshio; Kubota, Masayoshi; Takahashi, Sankichi; and Kaneko, Toyohiko, 4,280,886, Cl. 204-149.000.
Takamatsu, Jun: *See*—
Kawai, Toshio; Yamashita, Junichi; and Takamatsu, Jun, 4,280,874, Cl. 176-78.000.
Takamatsu, Toshiaki: *See*—
Nonomura, Keisaku; Takamatsu, Toshiaki; Uede, Hisashi; and Wada, Tomio, 4,281,324, Cl. 340-784.000.
Takao, Shuichiro: *See*—
Nomura, Takao; Umemoto, Yoshiro; and Takao, Shuichiro, 4,281,096, Cl. 528-53.000.
Takara Co., Ltd.: *See*—
Tomita, Tohru; Saitoh, Shinya; and Hirakata, Kazuo, 4,280,266, Cl. 29-241.000.
Takeda, Kunihiko: *See*—
Miyake, Tetsuya; Ogawa, Norito; Inada, Kohji; and Takeda, Kunihiko, 4,280,984, Cl. 423-6.000.
Takekoshi, Tohru, to General Electric Company. Injection moldable polyetherimide oligomers and method for making. 4,281,100, Cl. 528-188.000.

Takeshita, Masatoshi: *See—*
Suzuki, Ryo; Asano, Atsushi; Takeshita, Masatoshi; and Takeuchi, Teruaki, 4,281,395, Cl. 365-15.000.

Takeuchi, Teruaki: *See—*
Suzuki, Ryo; Asano, Atsushi; Takeshita, Masatoshi; and Takeuchi, Teruaki, 4,281,395, Cl. 365-15.000.

Takezawa, Mamoru: *See—*
Matsuhisa, Koh; Takezawa, Mamoru; and Kawajiri, Yoshio, 4,280,693, Cl. 271-246.000.

Takizawa, Norimasa: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,281,181, Cl. 562-453.000.

Talleu, Patrick: *See—*
Marjollet, Jacques; Tondeur, Gerard; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,280,825, Cl. 55-203.000.

Tanaka, Eiichiro, to Citizen Watch Co., Ltd. Water-proof case for digital electronic timepieces. 4,281,406, Cl. 368-82.000.

Tanaka, Takanori: *See—*
Morishita, Masanobu; and Tanaka, Takanori, 4,281,339, Cl. 358-52.000.

Tanaka, Toru: *See—*
Komatsu, Makoto; and Tanaka, Toru, 4,281,179, Cl. 562-416.000.

Tanaka, Yukihisa: *See—*
Hirai, Akira; Tanaka, Yukihisa; and Ohashi, Shigeo, 4,281,232, Cl. 200-315.000.

Tanasawa, Yasusi; Saito, Akinori; and Kawamura, Kiyomi, to Kabushiki Kaisha Toyoto Chuo Kenkyusho. Intermittent injection type fuel injection valve. 4,280,661, Cl. 239-409.000.

Tang, Ching W., to Eastman Kodak Company. Multilayer organic photovoltaic elements. 4,281,053, Cl. 430-58.000.

Tanigawa, Tetsuo: *See—*
Miyamoto, Yoshimi; and Tanigawa, Tetsuo, 4,281,214, Cl. 174-138.00F.

Tatsuta, Sumitaka: *See—*
Usami, Toshimasa; Kobayashi, Tomoyuki; Tatsuta, Sumitaka; and Komine, Shigeo, 4,281,060, Cl. 430-618.000.

Tatterson, David F.; and Vasalos, Iacovos A., to Standard Oil Company (Indiana). Fluid catalytic cracking of heavy petroleum fractions. 4,280,898, Cl. 208-119.000.

Tatum, Odes D.; and Ross, Edgar A., to Southern Weaving Company. Woven cover for electrical transmission cable. 4,281,211, Cl. 174-36.000.

Taylor, David L.: *See—*
McKenny, Vernon G.; and Taylor, David L., 4,281,398, Cl. 365-200.000.

Taylor, Frank, to Holbro A.G. Portable cooler with food receptacle. 4,280,336, Cl. 62-457.000.

Taylor, John D. Bridle bit sugar cube holder. 4,280,316, Cl. 54-8.000.

Taylor, Kenneth W. J., to Pennwalt Corporation. Torque limiting device. 4,280,606, Cl. 192-56.00C.

Taylor, William F., to Exxon Research & Engineering Co. High thermal stability liquid hydrocarbons and methods for producing them. 4,280,894, Cl. 208-15.000.

Tech Industries, Inc.: *See—*
Bromberg, Henry, 4,280,864, Cl. 156-500.000.

Technical Operations, Inc.: *See—*
Parsons, George W., Jr.; and Drainoni, Riccardo A., 4,281,252, Cl. 250-497.000.

Technicon Instruments Corporation: *See—*
Oberhardt, Bruce J.; and Wotherspoon, Neil, 4,280,815, Cl. 23-230.00B.

Telex Computer Products, Inc.: *See—*
Plachy, Ivo T., 4,280,646, Cl. 226-190.000.

Tell, Mayo B.: *See—*
Bryan, James S.; Tell, Mayo B.; Brooks, Alvin R., Jr.; and Gaster, Ivan, 4,280,383, Cl. 83-140.000.

Telschow, Jeffrey E.: *See—*
Fearing, Ralph B.; Telschow, Jeffrey E.; and Weil, Edward D., 4,281,071, Cl. 525-2.000.

Tenci, Pier L.: *See—*
Palazzetti, Mario; Ponti, Cesare; and Tenci, Pier L., 4,280,853, Cl. 136-246.000.

Tencor Instruments: *See—*
Wheeler, William R.; and Kren, George J., 4,280,354, Cl. 73-1.0DV.

Ten Haken, Pieter; Webb, Shirley B.; and Smith, Graham C., to Shell Oil Company. Derivatives of certain phenyliminomethylpyridines. 4,281,134, Cl. 546-334.000.

Tenneco Chemicals, Inc.: *See—*
Sidi, Henri; and Hughes, William G., 4,281,178, Cl. 562-412.000.

Terazawa, Michio: *See—*
Maruyama, Yutaka; Goto, Kazuhiro; and Terazawa, Michio, 4,281,001, Cl. 424-256.000.

Terner, Leslie L.: *See—*
Moskowitz, David; and Terner, Leslie L., 4,280,973, Cl. 264-63.000.

Terp, Gerald W.: *See—*
Leanna, Dale D.; Jorgensen, Allen R.; Terp, Gerald W.; LaHaye, John; and Nehring, Kenneth L., 4,280,669, Cl. 242-56.00A.

Terraillon, Paul. Balance with selectable multiple reading scales. 4,280,574, Cl. 177-41.000.

Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Jolly, Jean, 4,281,182, Cl. 562-506.000.

Testa, Victor; and Spector, George. Wave powered generator. 4,281,257, Cl. 290-42.000.

Teston, Richard E. Automotive vehicle wheel cover locking means. 4,280,348, Cl. 70-166.000.

Texaco Inc.: *See—*
Haag, James W., 4,280,362, Cl. 73-709.000.

Texas Instruments Incorporated: *See—*
Lou, Perry W.; Ponder, James E.; and Tubbs, Graham S., 4,280,271, Cl. 29-571.000.
Neal, Joseph H.; and Reed, Paul A., 4,281,397, Cl. 365-189.000.
Plouffe, Leo A.; and Unterweger, Diethard, 4,281,358, Cl. 361-22.000.
Redwine, Donald J.; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,281,401, Cl. 365-222.000.

Teyssie, Philippe: *See—*
Heuschen, Jean; Jerome, Robert; and Teyssie, Philippe, 4,281,087, Cl. 525-361.000.

Th. Goldschmidt AG: *See—*
Koerner, Gotz; Kropac, Vaclav; and Rau, Harald, 4,281,147, Cl. 556-459.000.

Theis, James V., Jr.: *See—*
Davis, Lynn M.; and Theis, James V., Jr., 4,280,675, Cl. 244-155.00A.

Thibault, James G.: *See—*
Kulesza, Ralph J.; Disko, Harry; and Thibault, James G., 4,280,300, Cl. 46-204.000.

Thiemer, Klaus: *See—*
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, 4,281,010, Cl. 424-275.000.

Thomas & Betts Corporation: *See—*
Grundfest, Michael A., 4,280,279, Cl. 33-180.00R.

Thomas, Gerhard; and Jung, Richard, to L. & C. Steinmuller GmbH. Apparatus for providing coal dust to a reaction chamber. 4,280,877, Cl. 202-91.000.

Thomas, Larry: *See—*
Herzog, Donald E.; and Thomas, Larry, 4,280,301, Cl. 51-5.00R.

Thompson, Albert E., Jr.: *See—*
Macurdy, William B.; and Thompson, Albert E., Jr., 4,280,364, Cl. 73-818.000.

Thompson, Chester C.; and Cleland, Marshall R., to Radiation Dynamics, Inc. Scanning beam deflection system and method. 4,281,251, Cl. 250-398.000.

Thompson, John R.: *See—*
Runciman, Susann I. C., 4,280,637, Cl. 222-39.000.

Thompson, Mortimer S. Method of manufacturing a blow-molded container with an integral handle. 4,280,859, Cl. 156-73.500.

Thomsen, Alfred, to A/S Alfred Thomsen. Scattering apparatus. 4,280,663, Cl. 239-685.000.

Thomson-CSF: *See—*
Charles, Eliane; Hildebrandt, Mieczyslaw; and Buchy, Francois, 4,280,846, Cl. 106-73.200.
Maerfeld, Charles; and Gautier, Herve, 4,281,350, Cl. 358-213.000.

Thornley, Glenn D.: *See—*
Strolle, Clifford H.; and Thornley, Glenn D., 4,281,078, Cl. 525-131.000.

Thran, Volker; and Treige, Werner. Transportable apparatus for taking samples for microbiological, particularly bacteriological tests from surfaces. 4,281,066, Cl. 435-292.000.

TI Fords Limited: *See—*
Ford, Geoffrey E., 4,280,624, Cl. 209-524.000.

Tikhonov, Valentin N.: *See—*
Shlykov, Gennady N.; Dyachkov, Vasily M.; Zhestkov, Vitaly I.; and Tikhonov, Valentin N., 4,280,252, Cl. 19-255.000.

Tile Council of America Inc.: *See—*
Ellis, Jeffrey R.; and Wagner, Herman B., 4,280,848, Cl. 106-90.000.

Tilley, Jefferson W., to Hoffmann-La Roche Inc. Sulfonamide intermediates for adrenergic blocking agents. 4,281,189, Cl. 564-92.000.

Timex Corporation: *See—*
Kostanecki, Andrew T., 4,280,257, Cl. 24-206.00R.

Timms, Rayford W.; and Waidmann, Raymond C., to American Air Filter Company, Inc. Positive brake for a vehicle wheel. 4,280,595, Cl. 188-31.000.

Tioxide Group Limited: *See—*
Howard, Peter B.; and Broadhurst, Peter J., 4,280,849, Cl. 106-300.000.

Togashi, Koichi: *See—*
Kanai, Seikichi; Komiyama, Kunihiko; and Togashi, Koichi, 4,280,464, Cl. 123-447.000.

Tojo, Tsutomu, to Olympus Optical Co., Ltd. Objective lens system for microscopes. 4,280,757, Cl. 350-414.000.

Tokyo Sanyo Electric Co., Ltd.: *See—*
Ozawa, Toshiyuki, 4,281,259, Cl. 307-514.000.
Yoshii, Kazuhiro; and Kubota, Norikazu, 4,280,331, Cl. 62-148.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Egawa, Hideharu; Matsuki, Koji; and Suzuki, Yasoji, 4,280,272, Cl. 29-571.000.
Kondow, Ryotaro; and Okamoto, Eiichi, 4,281,386, Cl. 364-492.000.
Sawa, Tsuna; and Ishii, Yashunori, 4,281,268, Cl. 313-60.000.
Seimiya, Motoo; and Nishida, Katsutoshi, 4,280,989, Cl. 423-344.000.
Tsunoda, Sachio; and Yamagata, Ichiro, 4,280,788, Cl. 415-1.000.

Tolley, William K.; and Laughlin, William C., to UOP Inc. Recovery of metal values from a metal bearing source of nickel and vanadium. 4,280,839, Cl. 75-82.000.

Tolliver, Wilbur E. Hinged reinforcement assembly and method. 4,280,310, Cl. 52-646.000.

Tomisawa, Setsuo: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,281,015, Cl. 424-287.000.

Tomita, Tohru; Saitoh, Shinya; and Hirakata, Kazuo, to Takara Co., Ltd. Automatic bead threading toy. 4,280,266, Cl. 29-241.000.

Tondeur, Gerard: *See*—
Marjollet, Jacques; Tondeur, Gerard; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,280,825, Cl. 55-203.000.

Tonrey, John F. Laminar child resistant package. 4,280,621, Cl. 206-534.000.

Tool Production and Design Company Limited, The: *See*—
Dyche, Leslie, 4,280,786, Cl. 414-749.000.

Torii, Shuuji: *See*—
Katayose, Shinji; Sasabe, Yukiyoshi; Yokota, Yoshiaki; Kuroki, Junsuke; and Torii, Shuuji, 4,280,411, Cl. 104-112.000.

Toro Company, The: *See*—
Comer, Robert C.; and Kruzel, Thomas F., 4,280,276, Cl. 30-144.000.

Tosima, Soitiro, to RCA Corporation. Surface acoustic wave pickup and recording device. 4,281,407, Cl. 369-130.000.

Towart, Robertson: *See*—
Franckowiak, Gerhard; Bossert, Friedrich; Heise, Arend; and Towart, Robertson, 4,280,998, Cl. 424-250.000.

Toyoda-Koki Kabushiki Kaisha: *See*—
Nakaso, Toru; Nomura, Kenji; and Nakashima, Kunimichi, 4,281,385, Cl. 364-474.000.

Toyoshima, Shigeru: *See*—
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setsuo; and Toyoshima, Shigeru, 4,281,015, Cl. 424-287.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hanai, Kiyoshi; and Kondo, Takeo, 4,280,717, Cl. 280-663.000.
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,280,374, Cl. 74-695.000.
Miyamoto, Yoshimi; and Tanigawa, Tetsuo, 4,281,214, Cl. 174-138.00F.
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,280,459, Cl. 123-307.000.
Nomura, Takao; Umemoto, Yoshiro; and Takao, Shuichiro, 4,281,096, Cl. 528-53.000.
Ueda, Tatehito, 4,280,470, Cl. 123-569.000.

Traenckner, Hans-Joachim: *See*—
Frank, Walter; Bendszus, Otto; Freier, Hans J; and Traenckner, Hans-Joachim, 4,281,068, Cl. 521-62.000.

Transmet Corporation: *See*—
Stutz, David E.; Atterbury, Thomas; and Scharenberg, William F., Jr., 4,281,284, Cl. 324-58.00A.

Trapp, Horst: *See*—
Stoeckigt, Dieter; Kiessling, Dieter; Perner, Johannes; Trieselt, Wolfgang; and Trapp, Horst, 4,280,919, Cl. 252-135.000.

Treharne, Timothy J. M., to Trivet Developments Limited. Method and apparatus for the production of molded meat or meat-like products. 4,280,803, Cl. 425-99.000.

Treige, Werner: *See*—
Thran, Volker; and Treige, Werner, 4,281,066, Cl. 435-292.000.

Tremblay, Raymond. Gambling aid. 4,280,702, Cl. 273-144.00B.

Trenkle, Robert W.: *See*—
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,281,177, Cl. 260-513.00R.

Tri Delta Industries, Inc.: *See*—
Peloquin, Conrad, 4,281,235, Cl. 219-121.0ED.

Trickel, Lorn L. Race track lure speed control assembly. 4,280,694, Cl. 272-4.000.

Trieselt, Wolfgang: *See*—
Stoeckigt, Dieter; Kiessling, Dieter; Perner, Johannes; Trieselt, Wolfgang; and Trapp, Horst, 4,280,919, Cl. 252-135.000.

Trivet Developments Limited: *See*—
Treharne, Timothy J. M., 4,280,803, Cl. 425-99.000.

Troiano, Joseph. Gold cup cover and putting aid. 4,280,698, Cl. 273-34.00B.

Trousdell, Edmund D., to United Technologies Corporation. Interblade seal for axial flow rotary machines. 4,280,795, Cl. 416-218.000.

True Temper Corporation: *See*—
Germain, Robert A., 4,280,727, Cl. 294-54.000.

Trukenbrod, Karl: *See*—
Leithauser, Horst; Osterhoff, Heinz; and Trukenbrod, Karl, 4,281,036, Cl. 427-222.000.

Truran, Peter W. Screen for fireplace grate. 4,280,475, Cl. 126-164.000.

Tsao, George T.; Ladisch, Michael R.; Ladisch, Christine M.; and Hsu, Teh-An, to Purdue Research Foundation. Process for treating cellulosic materials and obtaining glucose therefrom. 4,281,063, Cl. 435-99.000.

Tschannen, Gottfried, to Siemens-Alris AG. Correction circuit for improving the sharpness of contour of video images. 4,281,347, Cl. 358-166.000.

Tsuchiya, Mitsuharu: *See*—
Wada, Ryoichi; Tsuchiya, Mitsuharu; Odagi, Kanji; and Senoo, Takanori, 4,281,355, Cl. 360-32.000.

Tsuchiya, Yoshikazu: *See*—
Ohmori, Taiji; Tsuchiya, Yoshikazu; Sato, Makoto; Miyakawa, Yoshitaka; and Fujii, Etsuo, 4,280,740, Cl. 303-92.000.

Tsuda, Yoshio: *See*—
Okamoto, Hiroyuki; Tsuda, Yoshio; and Yokoyama, Kazumasa, 4,280,996, Cl. 424-199.000.

Tsunoda, Sachio; and Yamagata, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Multistage hydraulic machine system and a method for controlling the operation thereof. 4,280,788, Cl. 415-1.000.

Tsuzuki, Mitsuo; and Suga, Michihisa, to Nippon Electric Co., Ltd. Ink-on-demand type ink-jet printer with coordinated variable size drops with variable charges. 4,281,333, Cl. 346-140.00R.

Tu, Hosheng: *See*—
Shah, Syed M.; and Tu, Hosheng, 4,280,897, Cl. 208-113.000.

Tubbs, Graham S.: *See*—
Lou, Perry W.; Ponder, James E.; and Tubbs, Graham S., 4,280,271, Cl. 29-571.000.

Tucker, Albert R.: *See*—
Milberger, Lionel J.; and Tucker, Albert R., 4,280,531, Cl. 137-624.110.

Tupitsyn, Konstantin K.: *See*—
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Tupitsyn, Konstantin K., 4,280,573, Cl. 175-418.000.

Tupitsyn, Sergei K.: *See*—
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Tupitsyn, Konstantin K., 4,280,573, Cl. 175-418.000.

Turner, Joseph D., to Sun Visors, Inc. Glare shield for vehicle sun visor. 4,280,730, Cl. 296-97.00G.

Turney, Mary E., to Union Carbide Corporation. Antiperspirant stick compositions. 4,280,994, Cl. 424-68.000.

Tyler Refrigeration Corporation: *See*—
Perez, Arthur; and Abraham, Fayez F., 4,280,335, Cl. 62-332.000.

Uchiyama, Mutsuo, to Hilka International Co., Ltd. Binocular's focus or zoom adjusting knob. 4,280,750, Cl. 350-76.000.

Uchiyama, Takashi: *See*—
Ogawa, Yukio; Suzuki, Ryoichi; Kinoshita, Takao; and Uchiyama, Takashi, 4,280,761, Cl. 354-29.000.

Ueda, Hirotada; Yasue, Toshikazu; and Uno, Takeshi, to Hitachi, Ltd. Mark detecting system using image pickup device. 4,281,342, Cl. 358-93.000.

Ueda, Tatehito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Three-step exhaust gas recirculation control system. 4,280,470, Cl. 123-569.000.

Uede, Hisashi: *See*—
Nonomura, Keisaku; Takamatsu, Toshiaki; Uede, Hisashi; and Wada, Tomio, 4,281,324, Cl. 340-784.000.
Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, 4,280,754, Cl. 350-357.000.

Ugaji, Masana; Suyama, Hideo; Sakurai, Sadaaki; Yamaoka, Shigenori; Endo, Toshinaga; and Kusuhara, Akinobu, to Sony Corporation. Electro-acoustic transducer. 4,281,223, Cl. 179-115.00R.

Ullman, Edwin F.: *See*—
Zuk, Robert F.; Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., 4,281,061, Cl. 435-7.000.

Umemoto, Masuo: *See*—
Takahashi, Kenji; Nagahara, Shusaku; Sato, Kazuhiro; Umemoto, Masuo; Akiyama, Toshiyuki; and Izumita, Morishi, 4,281,338, Cl. 358-44.000.

Umemoto, Yoshiro: *See*—
Nomura, Takao; Umemoto, Yoshiro; and Takao, Shuichiro, 4,281,096, Cl. 528-53.000.

Umetani, Masakazu: *See*—
Kuwano, Yukinori; Imai, Terutoyo; and Umetani, Masakazu, 4,281,208, Cl. 136-249.000.

Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, to Nippon Kayaku Kabushiki Kaisha. Process for producing threo-3-amino-2-hydroxybutanoyl-aminoacetic acids, as well as novel intermediated therefor and process for producing them. 4,281,180, Cl. 562-448.000.

Uni-Cardan AG: *See*—
Krude, Werner, 4,280,341, Cl. 64-23.000.

Union Carbide Corporation: *See*—
Davis, Charles, Jr., 4,281,046, Cl. 429-72.000.
Dunleavy, Raymond A.; and Gill, William A., 4,280,979, Cl. 264-157.000.
Knopf, Robert J., 4,281,172, Cl. 560-185.000.
Koerwer, John F., 4,280,832, Cl. 71-94.000.
Maresca, Louis M., 4,281,099, Cl. 528-176.000.
Turney, Mary E., 4,280,994, Cl. 424-68.000.

United States of America
Agriculture: *See*—
Donaldson, Darrell J.; and Harper, Robert J., Jr., 4,280,812, Cl. 8-116.00P.
Air Force: *See*—
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Ito, Thomas I.; and Nakahara, James H., 4,281,185, Cl. 564-13.000.
Army: *See*—
Donnally, William; and Smith, Chester L., 4,280,355, Cl. 73-5.000.
Kronenberg, Stanley; Siebentritt, Carl R.; and Van Gorden, Harry, 4,281,250, Cl. 250-377.000.
Shreve, James S., 4,280,752, Cl. 350-162.0SF.
Energy: *See*—
Ahrens, Frederick W.; and Kartsounes, George T., 4,281,256, Cl. 290-1.00R.
Corliss, John M.; and Stickford, George H., 4,280,333, Cl. 62-259.100.
Donaldson, Erle C.; and Sutterfield, F. Dexter, 4,281,289, Cl. 324-355.000.

Environmental Protection Agency: *See*—
White, Edward, V; Hertz, Harry S.; and Christensen, Richard G., 4,281,246, Cl. 250-282.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Lombardi, Frank. Head for high speed spinner having a vacuum chuck. 4,280,689, Cl. 269-21.000.
St. Clair, Terry L.; and Butler, John M. Tackifier for addition polyimides containing monoethylphthalate. 4,281,102, Cl. 528-229.000.
National Aeronautics and Space Administration: *See*—
Goss, Willis C.; and Goldstein, Raymond, 4,280,766, Cl. 356-350.000.
Groom, Nelson J.; Anderson, Williard W.; and Phillips, William H., 4,281,384, Cl. 364-453.000.
Navy: *See*—
Patz, Benjamin W.; Berke, Herbert; and Mendorf, Donald R., 4,281,361, Cl. 361-401.000.
Rozner, Alexander G.; and Helms, Horace H., 4,280,409, Cl. 102-364.000.
Sica, Louis, Jr.; and Szu, Hwaling H., 4,280,764, Cl. 356-35.500.
Wilson, Jeffrey V.; and Briggs, William D., 4,280,430, Cl. 114-51.000.

U.S. Philips Corporation: *See*—
Bonnerot, Georges, 4,281,408, Cl. 370-70.000.
Eisemann, Kurt; and Montag, Jurgen, 4,280,705, Cl. 369-233.000.
Roos, Jan, 4,281,396, Cl. 365-29.000.
Stevens, Richard; Mitchell, Richard F.; and White, Philip D., 4,281,301, Cl. 333-195.000.
Van Opdorp, Christianus J. M.; and Veenvliet, Hendrik, 4,280,858, Cl. 148-175.000.

United States Pipe and Foundry Company: *See*—
Haspert, John C., 4,280,732, Cl. 299-11.000.

United Technologies Corporation: *See*—
Narkon, Norman W., 4,280,721, Cl. 285-179.000.
Trousdell, Edmund D., 4,280,795, Cl. 416-218.000.

Universal Framework Coupling (Proprietary) Limited: *See*—
Ceglowski, Jerzy W., 4,280,769, Cl. 403-218.000.

University of Illinois Foundation, The: *See*—
Gaul, John H., Jr.; and Drago, Russell S., 4,281,086, Cl. 525-330.000.

University Patents, Inc.: *See*—
Zeitlin, Harry; and Fernando, Quintus, 4,280,986, Cl. 423-41.000.

Uno, Takeshi: *See*—
Ueda, Hirotada; Yasue, Toshikazu; and Uno, Takeshi, 4,281,342, Cl. 358-93.000.

Unterweger, Diethard: *See*—
Plouffe, Leo A.; and Unterweger, Diethard, 4,281,358, Cl. 361-22.000.

UOP Inc.: *See*—
Antos, George J., 4,280,899, Cl. 208-139.000.
Antos, George J., 4,280,930, Cl. 252-466.00B.
Shah, Syed M.; and Tu, Hosheng, 4,280,897, Cl. 208-113.000.
Tolley, William K.; and Laughlin, William C., 4,280,839, Cl. 75-82.000.
Vora, Bipin V.; and Vickers, Anthony G., 4,280,880, Cl. 203-23.000.

Upjohn Company, The: *See*—
Axen, Udo F.; and Sih, John C., 4,281,113, Cl. 542-426.000.
Hall, Charles M.; and Wright, John B., 4,281,151, Cl. 560-44.000.
Schurr, Paul E.; and Day, Charles E., 4,281,013, Cl. 424-283.000.
Sih, John C., 4,281,150, Cl. 560-10.000.
Sih, John C., 4,281,154, Cl. 560-121.000.
Sih, John C., 4,281,155, Cl. 560-121.000.
Sih, John C., 4,281,156, Cl. 560-121.000.
Sih, John C., 4,281,157, Cl. 560-121.000.
Sih, John C., 4,281,158, Cl. 560-121.000.
Sih, John C., 4,281,159, Cl. 560-121.000.
Sih, John C., 4,281,160, Cl. 560-121.000.
Sih, John C., 4,281,161, Cl. 560-121.000.
Sih, John C., 4,281,162, Cl. 560-121.000.
Sih, John C., 4,281,163, Cl. 560-121.000.
Sih, John C., 4,281,164, Cl. 560-121.000.
Sih, John C., 4,281,165, Cl. 560-121.000.
Sih, John C., 4,281,166, Cl. 560-121.000.
Sih, John C., 4,281,167, Cl. 560-121.000.
Sih, John C., 4,281,168, Cl. 560-121.000.
Sih, John C., 4,281,169, Cl. 560-121.000.
Sih, John C., 4,281,191, Cl. 564-189.000.
Sih, John C., 4,281,205, Cl. 568-380.000.

Usami, Toshimasa; Kobayashi, Tomoyuki; Tatsuta, Sumitaka; and Komine, Shigeo, to Fuji Photo Film Co., Ltd. Heat-developable photosensitive materials. 4,281,060, Cl. 430-618.000.

USM Corporation: *See*—
Gilbride, Andrew J., 4,280,242, Cl. 12-12.400.

Vadetec Corporation: *See*—
Pouliot, Harvey N., 4,280,369, Cl. 74-191.000.

Van Baelen, Armand R., to Baxter Travenol Laboratories, Inc. Phlebotomy needle assembly. 4,280,496, Cl. 128-214.00R.

Van Berkel, Johannes: *See*—
Syrier, Johannes L. M.; and Van Berkel, Johannes, 4,281,203, Cl. 568-303.000.

Van Calfee, Richard: *See*—
Baker, Ross G., Jr.; and Van Calfee, Richard, 4,280,502, Cl. 128-419.0PG.

van der Lely, Cornelis. Earthworking machine. 4,280,564, Cl. 172-151.000.

van der Lely, Cornelis. Soil working machine. 4,280,565, Cl. 172-548.000.

van Dongeren, Jan P., to Wavin B.V. Plastics pipes having walls with lengthwise extending channels. 4,280,534, Cl. 138-109.000.

Van Gorden, Harry: *See*—
Kronenberg, Stanley; Siebentritt, Carl R.; and Van Gorden, Harry, 4,281,250, Cl. 250-377.000.

van Heijst, Willem J., to Single Buoy Moorings, Inc. Single-point mooring buoy. 4,280,238, Cl. 9-8.00R.

Van Leverink, Johannes. Extrusion process for the preparation of anhydrous stable lactose. 4,280,997, Cl. 424-151.000.

Van Opdorp, Christianus J. M.; and Veenvliet, Hendrik, to U.S. Philips Corporation. Method of manufacturing a semiconductor device by retarding the diffusion of zinc or cadmium into a device region. 4,280,858, Cl. 148-175.000.

Van Wicklin, Warren A., Jr., to Ford Motor Company. Steering wheel assembly. 4,280,372, Cl. 74-552.000.

Varnello, Eduard P.: *See*—
Sudnishnikov, Boris V.; Kamensky, Veniamin V.; Varnello, Eduard P.; Tupitsyn, Sergei K.; and Tupitsyn, Konstantin K., 4,280,573, Cl. 175-418.000.

Vasalos, Iacovos A.: *See*—
Tatterson, David F.; and Vasalos, Iacovos A., 4,280,898, Cl. 208-119.000.

Vasseux, Jean: *See*—
Escher, Balint; Prince, Dominique; and Vasseux, Jean, 4,280,270, Cl. 29-570.000.

Veb Arzneimittelwerk Dresden: *See*—
Kallis, Karl-Heinz, 4,281,062, Cl. 435-14.000.

Veeder Industries Inc.: *See*—
Smilgys, Bruno S., 4,281,240, Cl. 235-139.00R.

Veenvliet, Hendrik: *See*—
Van Opdorp, Christianus J. M.; and Veenvliet, Hendrik, 4,280,858, Cl. 148-175.000.

Veldhuizen, John V. Anti-pollution manifold for I.C.E. 4,280,588, Cl. 181-240.000.

Velsicol Chemical Corporation: *See*—
Albright, James A., 4,281,097, Cl. 528-72.000.
Nametz, Richard C.; and Moore, Paul O., 4,280,952, Cl. 260-45.95G.

Vepa AG: *See*—
Fleissner, Hans, 4,280,343, Cl. 68-158.000.

Vertut, Jean: *See*—
Corfa, Yves-Paul; Marchal, Paul; Roussel, Victor; and Vertut, Jean, 4,280,288, Cl. 37-54.000.

Vick, Howard A.: *See*—
Kraft, Thomas L.; Vick, Howard A.; and Hossom, Miles G., 4,281,387, Cl. 364-497.000.

Vickers, Anthony G.: *See*—
Vora, Bipin V.; and Vickers, Anthony G., 4,280,880, Cl. 203-23.000.

Viens, Jean-Claude: *See*—
Peacey, John G.; Ebersole, Ralph R.; Kitzinger, Frank; and Viens, Jean-Claude, 4,281,290, Cl. 324-426.000.

Vinals, Joaquin F.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,280,515, Cl. 131-276.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,280,933, Cl. 252-522.00R.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,281,177, Cl. 260-513.00R.

Vincent, Vera M., to General Electric Company Limited, The. Manufacture of monolithic LED arrays for electroluminescent display devices. 4,280,273, Cl. 29-577.00R.

Virgilio, Joseph A.; Manowitz, Milton; and Heilweil, Emanuel, to Givaudan Corporation. 2-Alkyl-3-haloisothiazolium salts and their derivatives. 4,281,136, Cl. 548-206.000.

Virginia Patent Development Corp.: *See*—
Bogese, Stephen B., II, 4,281,212, Cl. 174-36.000.

Virolleau, Alain F.; Kant, Michel; and Burnier, Pierre H., to Gradient. Hybrid stator and a two-axis induction electric motor constructed therewith. 4,281,263, Cl. 310-13.000.

VLSI Technology Research Association: *See*—
Shibata, Hiroshi; Iwasaki, Hideo; and Yamada, Kunio, 4,280,854, Cl. 148-1.500.
Yamamoto, Shin'ichiro, 4,281,399, Cl. 365-203.000.

Vock, Manfred H.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,280,515, Cl. 131-276.000.
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Granda, Edward J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,280,933, Cl. 252-522.00R.
Sprecker, Mark A.; Trenkle, Robert W.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,281,177, Cl. 260-513.00R.

Voest-Alpine Aktiengesellschaft: *See*—
Bayer, Franz; Schubert, Hermann; and Kagerhuber, Franz, 4,280,552, Cl. 164-448.000.

Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,280,688, Cl. 266-245.000.
Volenec, Donald C. Tandem fishhook. 4,280,296, Cl. 43-44.810.
Volkin, Howard C. Direct solar pumped laser. 4,281,294, Cl. 331-94.50L.
vonAllmen, Martin; and Wittmer, Marc, to BBC Brown, Boveri & Co Limited. Process for the manufacture of electrical contacts upon semiconductor components. 4,281,236, Cl. 219-121.0LC.
von Eckardstein, Karl-Ernst: *See*—
Schwing, Friedrich W.; and von Eckardstein, Karl-Ernst, 4,280,771, Cl. 405-150.000.
Von Hapsburg, D. Lewis. Bulk loader. 4,280,315, Cl. 53-473.000.
von Holdt, John W. Simultaneously molded threaded port and plug. 4,280,976, Cl. 264-152.000.
Vonsbaek, Ebbe; Hansen, Claus C.; and Munthe, Lene, to E.C.-Hospitalsinventor A/S. Foldable wheel chair. 4,280,716, Cl. 280-642.000.
Vora, Bipin V.; and Vickers, Anthony G., to UOP Inc. Method of operating an isostripper column. 4,280,880, Cl. 203-23.000.
Vorwerk, Frederick E., to ACF Industries, Inc. Seal for fluidizing outlet. 4,280,706, Cl. 277-12.000.
Vysiotis, Theodor: *See*—
Struve, Hans-Dirk; Hess, Jurgen; and Vysiotis, Theodor, 4,280,799, Cl. 418-97.000.
W. R. Grace & Co.: *See*—
Bush, Richard W.; Jenkins, Russell J.; and Rie, John E., 4,280,888, Cl. 204-159.150.
W. R. Grace & Co., Cryovac Division: *See*—
Howe, Milton A., Jr., 4,280,811, Cl. 493-386.000.
Wack, David T. Rail end mounting bracket. 4,280,686, Cl. 256-65.000.
Wada, Ryoichi; Tsuchiya, Mitsuharu; Odagi, Kanji; and Senoo, Takanori, to Matsushita Electric Industrial Co., Ltd. Digital audio signal recorder. 4,281,355, Cl. 360-32.000.
Wada, Tomio: *See*—
Nonomura, Keisaku; Takamatsu, Toshiaki; Uede, Hisashi; and Wada, Tomio, 4,281,324, Cl. 340-784.000.
Wadensten, Theodore S. Vibratory belt cleaner with auxiliary vibratory resonance. 4,280,616, Cl. 198-499.000.
Wagner, Herman B.: *See*—
Ellis, Jeffrey R.; and Wagner, Herman B., 4,280,848, Cl. 106-90.000.
Wagner, Morris S.: *See*—
Hunt, Theodore R., 4,281,314, Cl. 340-147.00R.
Waidmann, Raymond C.: *See*—
Timms, Rayford W.; and Waidmann, Raymond C., 4,280,595, Cl. 188-31.000.
Wajert, William R.: *See*—
Schulz, Johann G.; Stanulonis, John J.; and Wajert, William R., 4,280,818, Cl. 44-56.000.
Walden, Jack M.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.
Walker, Loren H.: *See*—
Cutler, John H.; and Walker, Loren H., 4,281,276, Cl. 318-803.000.
Walker-Neer Mfg. Co., Inc.: *See*—
Willis, Clyde A., 4,280,535, Cl. 138-112.000.
Walker, William H.: *See*—
Smith, Charles W., Jr.; Zimmerman, Franz X.; and Walker, William H., 4,280,807, Cl. 432-205.000.
Walkowicz, Mieczyslaw: *See*—
Jedlinski, Zbigniew; Kotas, Antoni; Ryndak, Boleslaw; Mazur, Stanislaw; Czarnecki, Jan; Walkowicz, Mieczyslaw; and Jedlinski, Stanislaw, 4,281,074, Cl. 525-40.000.
Walli, Einar: *See*—
Subramanian, Kohur N.; Glaum, Gerald V.; and Walli, Einar, 4,280,988, Cl. 423-140.000.
Walon, Raoul, to CPC International Inc. Maltulose-containing syrups. 4,281,028, Cl. 426-658.000.
Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Imidazodiazepines and processes therefor. 4,280,957, Cl. 260-244.400.
Waltenberger, Peter: *See*—
Rutzen, Horst; Heidrich, Jochen; Bischoff, Martin; Kloubert, Udo; Waltenberger, Peter; and Wegener, Ingo, 4,281,196, Cl. 564-292.000.
Walter, Hans-Philipp. Drill hammer. 4,280,570, Cl. 175-92.000.
Walters, Leslie K., to General Motors Corporation. Evaporative emission control device. 4,280,466, Cl. 123-520.000.
Walters, Linwood A.; and Mersereau, J. Mark, to Rogers Corporation. Adhesion of phenolics to copper. 4,281,044, Cl. 428-460.000.
Walz, Klaus: *See*—
Nonn, Konrad; Walz, Klaus; Wolf, Karlheinz; and Boehmke, Gunther, 4,280,960, Cl. 260-403.000.
Wang, Richard H. S.: *See*—
Irick, Gether, Jr.; and Wang, Richard H. S., 4,281,129, Cl. 546-6.000.
Wang, Ting M.: *See*—
LaBuda, Edward F.; and Wang, Ting M., 4,280,608, Cl. 192-113.00B.
Wanner, Karl: *See*—
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,280,359, Cl. 73-123.000.
Ward, Christopher J.; and Hughes, Septimus, to Conveyor Improvements (Doncaster) Limited. Moving belt conveyor mechanism. 4,280,619, Cl. 198-823.000.
Ward Machinery Company, The: *See*—
Ward, William F., Sr., 4,280,386, Cl. 83-500.000.
Ward, Terence J., to John Wyeth & Brother Limited. Piperidino ureas and thioureas. 4,281,132, Cl. 546-224.000.
Ward, William C.: *See*—
Escott, Barnee M.; Reynolds, Jerald J.; and Ward, William C., 4,281,032, Cl. 427-135.000.
Ward, William F., Sr., to Ward Machinery Company, The. Paperboard slitting apparatus. 4,280,386, Cl. 83-500.000.
Warn, Stefan, to Globe Computers AB. Synchronization of digital memory with TV signal having interlace. 4,281,345, Cl. 358-149.000.
Warner, Lee A.; and Willcutt, Michael H., to Cotton Incorporated. Method and apparatus for emptying the contents of a container. 4,280,779, Cl. 414-420.000.
Warner, Willis L.; and Nelson, Edward J., to Cutter Laboratories, Inc. Container for platelet storage. 4,280,497, Cl. 128-272.000.
Warrick, Nancy J. Medical procedures monitoring and recording device. 4,281,330, Cl. 346-20.000.
Warsing, Daniel S.: *See*—
Denkowski, Walter J.; and Warsing, Daniel S., 4,280,373, Cl. 74-625.000.
Wason, Satish K., to J. M. Huber Corporation. Method for production of abrasive composition for use in toothpaste. 4,280,822, Cl. 51-308.000.
Watanabe, Haruo; Watanabe, Mutsuhito; Arima, Takao; and Yamada, Kosei, to Showa Sangyo Co., Ltd. Methods for refining oils and fats. 4,280,962, Cl. 260-424.000.
Watanabe, Hiroshi: *See*—
Takagi, Toshinori; Morimoto, Kiyoshi; and Watanabe, Hiroshi, 4,281,029, Cl. 427-38.000.
Watanabe, Mutsuhito: *See*—
Watanabe, Haruo; Watanabe, Mutsuhito; Arima, Takao; and Yamada, Kosei, 4,280,962, Cl. 260-424.000.
Watson, Robert E.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.
Wavin B.V.: *See*—
van Dongeren, Jan P., 4,280,534, Cl. 138-109.000.
Wean United, Inc.: *See*—
Miller, Paul W.; and Fobes, Norman H., 4,280,671, Cl. 242-78.300.
Webb, James E. Stove having auxiliary damper operably connected to access door. 4,280,476, Cl. 126-286.000.
Webb, Shirley B.: *See*—
Ten Haken, Pieter; Webb, Shirley B.; and Smith, Graham C., 4,281,134, Cl. 546-334.000.
Weber, Adolf; Rhau, Siegfried; and Ahlers, Utz-Udo, to Diehl GmbH & Co. Projectile. 4,280,408, Cl. 102-501.000.
Weber, Hermann. Plastic pellet cleaning apparatus and method for optical lense molding. 4,280,303, Cl. 51-163.100.
Webers, Werner: *See*—
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,281,206, Cl. 568-396.000.
Weeks, Robert W., to Clark Control, Inc. Electromagnetic switching apparatus. 4,281,305, Cl. 335-132.000.
Wegener, Ingo: *See*—
Rutzen, Horst; Heidrich, Jochen; Bischoff, Martin; Kloubert, Udo; Waltenberger, Peter; and Wegener, Ingo, 4,281,196, Cl. 564-292.000.
Weidner, Peter, to Diehl GmbH & Co. Electrical projectile detonator. 4,280,410, Cl. 102-210.000.
Weil, Edward D.: *See*—
Fearing, Ralph B.; Telschow, Jeffrey E.; and Weil, Edward D., 4,281,071, Cl. 525-2.000.
Weiss, Martin J.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Lai Chen, Sow-Mei, 4,281,153, Cl. 560-118.000.
Wells, Edward R. Floating boat storage dry dock. 4,280,429, Cl. 114-45.000.
Welsh, Charles B.: *See*—
Buchholz, Bernard; Welsh, Charles B.; and Miller, Henry C., 4,281,202, Cl. 568-62.000.
Wenninger, Fred, Jr.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.
Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Hurlemann, Ernst, 4,280,392, Cl. 89-33.0SF.
Singenberger, Emil; and Wilhelm, Heinz, 4,280,394, Cl. 89-37.00A.
Werner, John, Jr. Non-heeling sailboat. 4,280,428, Cl. 114-39.000.
Werres, Lothar, to Kraftwerk Union Aktiengesellschaft. Safety device for preventing unscrewing of cylinder-head screws having an inner polygon, and plastic deformation tool for use with the device. 4,280,875, Cl. 176-87.000.
West Electric Company, Ltd.: *See*—
Iwata, Hiroshi; Yamaoka, Tetsuo; and Mitsui, Hajime, 4,280,760, Cl. 354-21.000.
Western Electric Company, Inc.: *See*—
Ignatowicz, Alexander M., 4,280,746, Cl. 339-107.000.
Westhoff, Hermann: *See*—
Brokmann, Manfred; Sanders, Kurt; Sanders, Dieter; and Westhoff, Hermann, 4,280,548, Cl. 160-383.000.
Westinghouse Electric Corp.: *See*—
Baker, Donal E., 4,281,371, Cl. 363-10.000.

Calfo, Raymond M.; Mulach, Arthur; and Jones, Warren W., 4,281,266, Cl. 310-256.000.
Jersey, Chester A.; and Kiscaden, Roy W., 4,280,323, Cl. 60-39.14R.
Rexroad, James O.; and Majcher, John P., 4,281,227, Cl. 200-50.0AA.
Young, Robert G.; and Gilmore, John F., 4,281,271, Cl. 313-493.000.

Wetton, Raymond E.; and James, David B., to National Research Dev'p Corp. Amorphous complexes of polythioethers with salts. 4,281,072, Cl. 525-4.000.

Wheeler, Norton C., Jr.; Seuferling, John G.; and Pennila, Simo A. O., to Crompton & Knowles Corporation. Crosshead. 4,280,801, Cl. 425-113.000.

Wheeler, William R.; and Kren, George J., to Tencor Instruments. Acoustic method and apparatus for measuring surfaces of wafers and similar articles. 4,280,354, Cl. 73-1.0DV.

Whitcomb, Paul R., to Eaton Corporation. Tree processing apparatus. 4,280,539, Cl. 144-2.00Z.

White, Edward, V; Hertz, Harry S.; and Christensen, Richard G., to United States of America, Environmental Protection Agency. Continuous-flow solution concentrator and liquid chromatograph/mass spectrometer interface and methods for using both. 4,281,246, Cl. 250-282.000.

White, Fred C., to B R International. Tire traction device. 4,280,544, Cl. 152-221.000.

White, J. Paul. Apparatus and method for generating chorus and celeste tones. 4,280,388, Cl. 84-1.240.

White, Lionel S., Jr.: *See*—
Redwine, Donald J.; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,281,401, Cl. 365-222.000.

White, Philip D.: *See*—
Stevens, Richard; Mitchell, Richard F.; and White, Philip D., 4,281,301, Cl. 333-195.000.

Whitehouse, Harry T.: *See*—
Duval, Eugene F.; Bagshaw, David P.; Kast, Michael A.; Masters, Gilbert M.; and Whitehouse, Harry T., 4,280,478, Cl. 126-420.000.

Wiech, Norbert L.: *See*—
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Wiesenberger, Alfred; Mager, Lutz; Kolb, Erich; and Kreim, Karl, to Peter Eckes, Firma; and Adam Heldmann Kunststoffverarbeitung. Device for the repeated opening and closing of an aperture in a cover of a container. 4,280,634, Cl. 220-270.000.

Wilhelm, Heinz: *See*—
Singenberger, Emil; and Wilhelm, Heinz, 4,280,394, Cl. 89-37.00A.

Wilkuski, James E.: *See*—
Burzen, Don N.; Workman, David E.; Bromley, Robert L.; Elles, Daniel G.; and Wilkuski, James E., 4,280,247, Cl. 16-112.000.

Willcutt, Michael H.: *See*—
Warner, Lee A.; and Willcutt, Michael H., 4,280,779, Cl. 414-420.000.

Willenbring, Armer J.; Osby, Warren J.; and Gausman, James W., to Pako Corporation. Film tray assembly for photographic film cutter. 4,280,381, Cl. 83-86.000.

Williams, Alan: *See*—
Banks, Reginald G. S.; and Williams, Alan, 4,280,820, Cl. 48-214.00A.

Williams, Arthur R.: *See*—
Bond, Robert; and Williams, Arthur R., 4,280,543, Cl. 152-209.00R.

Williams, Frederick J.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,281,241, Cl. 235-400.000.

Williamson, William R. N., to Lilly Industries Limited. Pharmaceutically active indane derivatives. 4,281,017, Cl. 424-308.000.

Willis, Brian J.; and Eilerman, Robert G., to Fritzsche Dodge & Olcott Inc. Substituted spirocyclic derivatives. 4,281,204, Cl. 568-361.000.

Willis, Clyde A., to Walker-Neer Mfg. Co., Inc. Inner tube assembly for dual conduit drill pipe. 4,280,535, Cl. 138-112.000.

Wilson, Alexander I., to Hille Engineering Company Limited. Taper rolling of metal. 4,280,351, Cl. 72-21.000.

Wilson, Jeffrey V.; and Briggs, William D., to United States of America, Navy. Linked-spar motion-compensated lifting system. 4,280,430, Cl. 114-51.000.

Wilson, John C., to Eastman Kodak Company. Aldehyde-containing vinylaryl ethers. 4,281,207, Cl. 568-433.000.

Wirguin, Joseph M.; and Melamed, Avraham. Method and apparatus for drying and processing moisture-containing solids. 4,280,415, Cl. 110-224.000.

Wirz, Armin: *See*—
Martin, Wolfgang; Knopp, Hans; Herion, Dieter; Conzelmann, Gerhard; Leuchtmann, Guenter; Gujer, Peter; Guldenfels, Dieter; and Wirz, Armin, 4,280,260, Cl. 28-255.000.

Wischniewski, Martin; Feicho, Lutz; Fischer, Gerhard; and Peschke, Guenter, to Kali-Chemie Pharma GmbH. Process for the production of pancreatin pellets. 4,280,971, Cl. 264-15.000.

Wismer & Becker Contracting Engineers: *See*—
Albrecht, Robert G., 4,280,785, Cl. 414-735.000.

Wissel, Frank A.; Smith, Donald E.; Martinet, Robert L.; Dapper, Mark J.; and Kiliman, Douglas A., to Cincinnati Electronics Corporation. Method of and apparatus for transmitting and recovering offset QPSK modulated data. 4,281,412, Cl. 375-86.000.

Wittmer, Marc: *See*—
vonAllmen, Martin; and Wittmer, Marc, 4,281,236, Cl. 219-121.0LC.

Wojcik, Dennis J., to General Electric Company. Proximity detector system for a medical diagnostic device. 4,280,580, Cl. 180-169.000.

Wolf, Karlheinz: *See*—
Nonn, Konrad; Walz, Klaus; Wolf, Karlheinz; and Boehmke, Gunther, 4,280,960, Cl. 260-403.000.

Wollner, Johannes: *See*—
Brandes, Gunter; Wollner, Johannes; Neier, Wilhelm; and Webers, Werner, 4,281,206, Cl. 568-396.000.

Woltering, Howard M. Devices for producing vibratory forces. 4,280,368, Cl. 74-61.000.

Wong, Backman: *See*—
Duprez, Wayne R.; and Wong, Backman, 4,280,655, Cl. 236-34.500.

Wood, Ross C. Hole drilling machine and work positioning system. 4,280,775, Cl. 408-3.000.

Woodruff, Roy J. Apparatus for compacting soil. 4,280,770, Cl. 404-133.000.

Woodson, Richard W.: *See*—
Morrow, Ray E., Jr.; and Woodson, Richard W., 4,281,404, Cl. 367-108.000.

Wooley, Bruce A.: *See*—
Candy, James C.; and Wooley, Bruce A., 4,281,318, Cl. 340-347.0DD.

Wooten, William H., Jr.; and Speir, Donald W., to General Electric Company. Vectorable nozzle. 4,280,660, Cl. 239-265.350.

Worcester Controls Corp.: *See*—
Gonzalez, Ricardo, 4,280,526, Cl. 137-315.000.

Workman, David E.: *See*—
Burzen, Don N.; Workman, David E.; Bromley, Robert L.; Elles, Daniel G.; and Wilkuski, James E., 4,280,247, Cl. 16-112.000.

World Medical Marketing Corporation: *See*—
Hofstein, Steven R., 4,280,486, Cl. 128-25.00B.

Wotherspoon, Neil: *See*—
Oberhardt, Bruce J.; and Wotherspoon, Neil, 4,280,815, Cl. 23-230.00B.

Wotruba, Gottfried: *See*—
Moegen, Gerhard; and Wotruba, Gottfried, 4,281,260, Cl. 307-573.000.

Wright, John B.: *See*—
Hall, Charles M.; and Wright, John B., 4,281,151, Cl. 560-44.000.

Wright, Patrick, to PAJ Corporation. Template for stairway construction and the like. 4,280,282, Cl. 33-427.000.

Wu, Ching-Yong; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Regenerating perosmate catalyst. 4,280,924, Cl. 252-416.000.

Wulf, Rudolf: *See*—
Poetsch, Dieter; Becker, Werner; Klein, Ottokar; and Wulf, Rudolf, 4,281,351, Cl. 358-214.000.

Wurlitzer Company, The: *See*—
Klaiber, George S.; Grajek, Stanley A.; and Hill, Robert S., 4,280,389, Cl. 84-212.000.

Wurster, Helmut; and Blanc, Ernst, to Richard Wolf GmbH. Lighting systems for surgical operations. 4,281,366, Cl. 362-32.000.

Xerox Corporation: *See*—
Bogoshian, Gregory V., 4,280,443, Cl. 118-60.000.
Buckley, David A.; Ciccarelli, Roger N.; and Belli, Frank G., 4,281,050, Cl. 430-41.000.
Horgan, Anthony M.; and Radler, Richard W., 4,281,054, Cl. 430-59.000.
Seachman, Ned J., 4,281,254, Cl. 250-578.000.

Yaffe, Jerome, to FMC Corporation. Stabilized compositions containing N-aminosulfenylated derivatives of carbofuran. 4,281,014, Cl. 424-285.000.

Yamabe, Akira: *See*—
Inoue, Mitsuyori; and Yamabe, Akira, 4,281,027, Cl. 426-631.000.

Yamada, Kosei: *See*—
Watanabe, Haruo; Watanabe, Mutsuhito; Arima, Takao; and Yamada, Kosei, 4,280,962, Cl. 260-424.000.

Yamada, Kunio: *See*—
Shibata, Hiroshi; Iwasaki, Hideo; and Yamada, Kunio, 4,280,854, Cl. 148-1.500.

Yamada, Yasunori; and Shibue, Yuji, to Showa Aluminum Industries K.K. Method for treatment of Bayer liquor. 4,280,987, Cl. 423-119.000.

Yamagata, Ichiro: *See*—
Tsunoda, Sachio; and Yamagata, Ichiro, 4,280,788, Cl. 415-1.000.

Yamaguchi, Hiroshi; Kaneko, Hiroaki; and Nagano, Toshihiro, to Fuji Jukogyo Kabushiki Kaisha. Internal combustion engine. 4,280,455, Cl. 123-196.00M.

Yamamoto, Shin'ichiro, to VLSI Technology Research Association. Semiconductor memory device. 4,281,399, Cl. 365-203.000.

Yamaoka, Shigenori: *See*—
Ugaji, Masana; Suyama, Hideo; Sakurai, Sadaaki; Yamaoka, Shigenori; Endo, Toshinaga; and Kusuhara, Akinobu, 4,281,223, Cl. 179-115.00R.

Yamaoka, Tetsuo: *See*—
Iwata, Hiroshi; Yamaoka, Tetsuo; and Mitsui, Hajime, 4,280,760, Cl. 354-21.000.

Yamashita, Junichi: *See*—
Kawai, Toshio; Yamashita, Junichi; and Takamatsu, Jun, 4,280,874, Cl. 176-78.000.

Yamazaki, Isao: *See*—
Marukawa, Katsukiyo; Yamazaki, Isao; Anezaki, Syoji; and Kajimoto, Tsutomu, 4,280,838, Cl. 75-60.000.

Yan, Tsoung-yuan, to Mobil Oil Corporation. Process for the elution of ion exchange resins in uranium recovery. 4,280,985, Cl. 423-7.000.

Yanagita, Takanori: *See*—
Shindome, Mamoru; Yanagita, Takanori; Nakamura, Takanori; and Otsuji, Hiroyuki, 4,280,982, Cl. 422-185.000.

Yannas, Ioannis V.; Gordon, Philip L.; Huang, Chor; Silver, Frederick H.; and Burke, John F., to Massachusetts Institute of Technology. Crosslinked collagen-mucopolysaccharide composite materials. 4,280,954, Cl. 260-123.700.

Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Electrochromic display device and method of manufacture. 4,280,754, Cl. 350-357.000.

Yano, Yasuhiro; Haruta, Masahiro; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Liquid recording medium. 4,281,329, Cl. 346-1.100.

Yasue, Toshikazu: *See*—
Ueda, Hirotada; Yasue, Toshikazu; and Uno, Takeshi, 4,281,342, Cl. 358-93.000.

Yasukawa, Masao: *See*—
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,280,459, Cl. 123-307.000.

Yatsuzuka, Yohtaro: *See*—
Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,281,416, Cl. 455-601.000.

Yazawa, Chihiro: *See*—
Nakayama, Yoshiki; Higuchi, Yasushi; and Yazawa, Chihiro, 4,280,958, Cl. 260-326.11R.

Yi, Kon H. Water-flow-control device. 4,280,530, Cl. 137-624.110.

Yockey, Francis J.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,281,390, Cl. 364-706.000.

Yokota, Yoshiaki: *See*—
Katayose, Shinji; Sasabe, Yukiyoshi; Yokota, Yoshiaki; Kuroki, Junsuke; and Torii, Shuuji, 4,280,411, Cl. 104-112.000.

Yokoyama, Kazumasa: *See*—
Okamoto, Hiroyuki; Tsuda, Yoshio; and Yokoyama, Kazumasa, 4,280,996, Cl. 424-199.000.

Yoshida, Hirokazu: *See*—
Ogino, Yoshio; Mizukawa, Takumi; and Yoshida, Hirokazu, 4,281,378, Cl. 363-96.000.

Yoshida, Masaru: *See*—
Sugiura, Masakuzu; Kikutake, Junichiro; Yoshida, Masaru; and Kondo, Shigeharu, 4,280,992, Cl. 424-1.000.

Yoshida, Ryo: *See*—
Ichiki, Takemoto; Yoshida, Ryo; Sumida, Seizo; and Katsuzo, Kamoshita, 4,280,835, Cl. 71-120.000.

Yoshii, Kazuhiro; and Kubota, Norikazu, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Single effect and double effect absorption refrigerating system. 4,280,331, Cl. 62-148.000.

Yoshioka, Akiyoshi; Shibuya, Yoshikazu; and Nakanishi, Ioichiro, to Mitsubishi Denki Kabushiki Kaisha. Gas-insulated electrical apparatus with dielectric particle trapping barriers. 4,281,209, Cl. 174-14.00R.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Maruyama, Yutaka; Goto, Kazuhiro; and Terazawa, Michio, 4,281,001, Cl. 424-256.000.

Young, Robert G.; and Gilmore, John F., to Westinghouse Electric Corp. Compact fluorescent lamp having a partitioned envelope. 4,281,271, Cl. 313-493.000.

Yu, Terry T.: *See*—
Ovshinsky, Stanford R.; Angell, Daniel K.; and Yu, Terry T., 4,281,058, Cl. 430-296.000.

Yuasa, Sueto. Tennis training device. 4,280,697, Cl. 273-29.00A.

Yuhara, Yukitomo. Bottle cap. 4,280,632, Cl. 215-331.000.

Zabotin, Alexandr A.: *See*—
Onikov, Eduard A.; Galperin, Alexandr L.; Serebryannikov, Albert S.; Zabotin, Alexandr A.; and Loschilin, Evgeny D., 4,280,537, Cl. 139-436.000.

Zachok, Robert M.: *See*—
Bauer, Henry C.; Burns, Gary J.; Buzzard, Clair A.; Gordon, Travis H.; Kahlbrock, Heinz; Ricca, Robert F.; and Zachok, Robert M., 4,281,315, Cl. 340-147.00R.

Zahnraderfabrik Renk Aktiengesellschaft: *See*—
Zaunberger, Franz X.; and Kugler, Artur, 4,280,579, Cl. 180-6.440.

Zahnradfabrik Friedrichshafen AG: *See*—
Schreiner, Friedrich, 4,280,370, Cl. 74-339.000.

Zally, William J.: *See*—
Field, George F.; and Zally, William J., 4,281,142, Cl. 548-343.000.

Zaunberger, Franz X.; and Kugler, Artur, to Zahnraderfabrik Renk Aktiengesellschaft. Control for tracked vehicle steering mechanism. 4,280,579, Cl. 180-6.440.

Zecher, Wilfried; and Merten, Rudolf, to Bayer Aktiengesellschaft. Process for the preparation of hydantoins. 4,281,140, Cl. 548-313.000.

Zeigler, Theodore R. Hub assembly for collapsible structures. 4,280,521, Cl. 135-4.00R.

Zeitlin, Harry; and Fernando, Quintus, to University Patents, Inc. Method for separating metal values from sea nodules. 4,280,986, Cl. 423-41.000.

Zenith Radio Corporation: *See*—
Delsing, Dale; and Fogelson, Mark, 4,280,931, Cl. 252-518.000.

Zenzaburo Kawanishi: *See*—
Oka, Toshio, 4,280,299, Cl. 46-179.000.

Zeuner, Kenneth W.; and Jarman, Alonzo B., to Control Concepts, Inc. Hydraulic oscillator. 4,280,396, Cl. 91-320.000.

Zhestkov, Vitaly I.: *See*—
Shlykov, Gennady N.; Dyachkov, Vasily M.; Zhestkov, Vitaly I.; and Tikhonov, Valentin N., 4,280,252, Cl. 19-255.000.

Ziegler, Duane H.: *See*—
Friend, Kenneth D.; Gadtke, David W.; and Ziegler, Duane H., 4,281,388, Cl. 364-565.000.

Zimmerman, Franz X.: *See*—
Smith, Charles W., Jr.; Zimmerman, Franz X.; and Walker, William H., 4,280,807, Cl. 432-205.000.

Zintarra, Helmut; and Klupfel, Olaf, to Continental Gummi-Werke Aktiengesellschaft. Conveyor belt. 4,280,617, Cl. 198-699.000.

Zodrow, Rudolf; and Hoveler, Egon, to Jagenberg Werke AG. Labeling station. 4,280,866, Cl. 156-568.000.

Zuk, Robert F.; Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., to Syva Company. Double antibody for enhanced sensitivity in immunoassay. 4,281,061, Cl. 435-7.000.

Zukausky, Keith E.; and Berlin, Donald M., Jr., to Eaton Corporation. Cam actuated butterfly valve. 4,280,682, Cl. 251-251.000.

Zurcher, Rudolf F., to Hughes Aircraft Company. Digital watch/infrared plethysmograph having a removable pulse sensor unit for use with a finger cuff extension. 4,280,506, Cl. 128-690.000.

4P Nicolaus Kempten GmbH: *See*—
Schmidt, Werner, 4,280,652, Cl. 229-43.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JULY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Browning, Bruce E., Jr.: *See—*
Gray, Edward L.; and Browning, Bruce E., Jr., Re. 30,689, Cl. 83-471.200.

Canalizo, Carlos R., to Otis Engineering Corporation. Seal. Re. 30,690, Cl. 166-191.000.

Ellson, John C., to Northern Telecom Limited. Method and apparatus for measuring telephone line characteristics. Re. 30,692, Cl. 179-175.30R.

Gray, Edward L.; and Browning, Bruce E., Jr. Foldable bench for a portable hand-held circular saw. Re. 30,689, Cl. 83-471.200.

Hallstrom, James R.; Hoffman, Raymond J.; and Walling, Ronald L. Method of applying a wearing surface. Re. 30,691, Cl. 427-140.000.

Hoffman, Raymond J.: *See—*
Hallstrom, James R.; Hoffman, Raymond J.; and Walling, Ronald L., Re. 30,691, Cl. 427-140.000.

Northern Telecom Limited: *See—*
Ellson, John C., Re. 30,692, Cl. 179-175.30R.

Otis Engineering Corporation: *See—*
Canalizo, Carlos R., Re. 30,690, Cl. 166-191.000.

Schloemann-Siemag Aktiengesellschaft: *See—*
Zilges, Franz J.; and Siegert, Klaus, Re. 30,688, Cl. 72-273.500.

Siegert, Klaus: *See—*
Zilges, Franz J.; and Siegert, Klaus, Re. 30,688, Cl. 72-273.500.

Walling, Ronald L.: *See—*
Hallstrom, James R.; Hoffman, Raymond J.; and Walling, Ronald L., Re. 30,691, Cl. 427-140.000.

Zilges, Franz J.; and Siegert, Klaus, to Schloemann-Siemag Aktiengesellschaft. Extrusion press for indirect extrusion. Re. 30,688, Cl. 72-273.500.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See—*
Wirkkala, Veli T., 259,984, Cl. D7-13.000.

Advertising Displays Company: *See—*
Zaro, Marvin, 259,995, Cl. D8-354.000.

Ahrens, Paul W., to Miracle Recreation Equipment Company. Playground merry-go-round. 260,028, 7-28-81, Cl. D21-249.000.

Aktiebolaget Volvo: *See—*
Lindfors, Olof H., 260,010, Cl. D12-57.000.

Alpert, Alan. Table. 259,981, 7-28-81, Cl. D6-177.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground bounce and bend. 260,027, 7-28-81, Cl. D21-245.000.

Ament, Duane S.: *See—*
Ament, Donald S.; and Ament, Duane S., 260,027, Cl. D21-245.000.

American Sterilizer Company: *See—*
Brendgord, Thomas, 260,042, Cl. D26-65.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Schneider, Louis; Muth, Hans A.; and Kloth, Wolfgang, 259,974, Cl. D3-71.000.

Berliner, Emanuel, to Bristoline, Inc. Sphygmomanometer pressure gauge. 260,035, 7-28-81, Cl. D24-21.000.

Boyle, Daniel J.: *See—*
Jaeschke, Harold R.; and Boyle, Daniel J., 260,001, Cl. D9-433.000.

Braun AG: *See—*
Kahlcke, Hartwig, 259,992, Cl. D7-160.000.

Brendgord, Thomas, to American Sterilizer Company. Examination light. 260,042, 7-28-81, Cl. D26-65.000.

Bristoline, Inc.: *See—*
Berliner, Emanuel, 260,035, Cl. D24-21.000.

Burgett, John S. Melt point tester. 260,003, 7-28-81, Cl. D10-46.000.

Cal-Mar Industries, Inc.: *See—*
Maresca, Edward J., 260,040, Cl. D25-91.000.
Maresca, Edward J., 260,041, Cl. D25-91.000.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 260,012, 7-28-81, Cl. D12-147.000.

Carre, Alain, to Waterman, S.A. Ball-point pen. 260,021, 7-28-81, Cl. D19-49.000.

Champion International Corporation: *See—*
Jaeschke, Harold R.; and Boyle, Daniel J., 260,001, Cl. D9-433.000.
Roccaforte, Harry I., 260,000, Cl. D9-433.000.

Cities Service Company: *See—*
Kunze, Walter A., 259,993, Cl. D7-201.000.

Clairol Incorporated: *See—*
Wistrand, John, 260,008, Cl. D10-106.000.

Colgate-Palmolive Company: *See—*
Seelig, Barry G., 259,976, Cl. D4-25.000.

Crest Lock Company, Inc.: *See—*
Sheiman, Samuel R.; and Sheiman, Julius, 259,996, Cl. D8-375.000.

de Ruiter, Cornelis B., to Hunter Douglas N.V. Ceiling panel element. 260,039, 7-28-81, Cl. D25-74.000.

Diver-Viss S.r.l.: *See—*
Magistretti, Ludovico, 259,980, Cl. D6-127.000.

Dokter, Robert F. Clock. 260,002, 7-28-81, Cl. D10-21.000.

Drumm, Don; and Mazzola, John P. Plate. 259,985, 7-28-81, Cl. D7-27.000.

DuBois, Thomas H.; and Peters, Theodore J., to Jonathan Bradley Pens, Inc. Writing instrument. 260,020, 7-28-81, Cl. D19-42.000.

English, Joseph R. Picture frame. 259,983, 7-28-81, Cl. D6-234.000.

Epstein, David. Racket frame. 260,025, 7-28-81, Cl. D21-212.000.

Gehrke, George E. Fishing reel. 260,029, 7-28-81, Cl. D22-25.000.

General Electric Company: *See—*
Wilkerson, Harold E., 259,998, Cl. D9-424.000.
Wilkerson, Harold E., 259,999, Cl. D9-424.000.

Hamilton, John F., Sr. Picture frame. 259,978, 7-28-81, Cl. D6-235.000.

Hazenveld, Martin G. Garment hanger body. 259,979, 7-28-81, Cl. D6-257.000.

Hoese, Fred O. Vehicle overhead console. 260,013, 7-28-81, Cl. D12-155.000.

Hunter Douglas N.V.: *See—*
de Ruiter, Cornelis B., 260,039, Cl. D25-74.000.

Ishikawa, Minoru: *See—*
Ohhasi, Yasuo; Ishikawa, Minoru; Nagata, Kunio; and Nagao, Toshiaki, 260,004, Cl. D10-50.000.

Jaeschke, Harold R.; and Boyle, Daniel J., to Champion International Corporation. Blank for forming an emergency medication package. 260,001, 7-28-81, Cl. D9-433.000.

Jonathan Bradley Pens, Inc.: *See—*
DuBois, Thomas H.; and Peters, Theodore J., 260,020, Cl. D19-42.000.

Kabushiki Kaisha Tokiwa Seisakusho: *See—*
Saito, Retsuo; and Nagase, Junji, 260,024, Cl. D21-210.000.

Kahlcke, Hartwig, to Braun AG. Food processor attachment for an electric food machine. 259,992, 7-28-81, Cl. D7-160.000.

Kameda, Kiyoaki. Caster. 259,982, 7-28-81, Cl. D6-191.000.

Kelsey-Hayes Company: *See—*
Sheill, David D., 260,014, Cl. D12-180.000.
Sheill, David D., 260,015, Cl. D12-180.000.

Kingston, Arlene. Decal for childrens' garments. 260,022, 7-28-81, Cl. D20-11.000.

Kloth, Wolfgang: *See—*
Schneider, Louis; Muth, Hans A.; and Kloth, Wolfgang, 259,974, Cl. D3-71.000.

Kunze, Walter A., to Cities Service Company. Wash board. 259,993, 7-28-81, Cl. D7-201.000.

LaBarbera, Angelo M., to SCM Corporation. Carrying case for a typewriter. 259,975, 7-28-81, Cl. D3-72.000.

Leisure Dynamics, Inc.: *See—*
Pagani, David A.; and Pook, Peter D., 260,023, Cl. D21-13.000.

Leo, Brenda: *See—*
Leo, Mark; and Leo, Brenda, 260,007, Cl. D10-92.000.

Leo, Mark; and Leo, Brenda. Weighing scale. 260,007, 7-28-81, Cl. D10-92.000.

Lindfors, Olof H., to Aktiebolaget Volvo. Remote controlled fork truck. 260,010, 7-28-81, Cl. D12-57.000.

Lord's Power Company, Inc.: *See—*
Pearson, Darrell A., 260,031, Cl. D23-72.000.

Lorenzo, Osvaldo J. Aquarium cover. 260,044, 7-28-81, Cl. D30-12.000.

Magistretti, Ludovico, to Diver-Viss S.r.l. Cabinet. 259,980, 7-28-81, Cl. D6-127.000.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 259,987, 7-28-81, Cl. D7-137.000.
Maresca, Edward J., to Cal-Mar Industries, Inc. Translucent interlocking panel member for ceilings or the like. 260,040, 7-28-81, Cl. D25-91.000.
Maresca, Edward J., to Cal-Mar Industries, Inc. Translucent interlocking panel member for ceilings or the like. 260,041, 7-28-81, Cl. D25-91.000.
Mazzola, John P.: *See—*
Drumm, Don; and Mazzola, John P., 259,985, Cl. D7-27.000.
Miracle Recreation Equipment Company: *See—*
Ahrens, Paul W., 260,028, Cl. D21-249.000.
Ament, Donald S.; and Ament, Duane S., 260,027, Cl. D21-245.000.
Muth, Hans A.: *See—*
Schneider, Louis; Muth, Hans A.; and Kloth, Wolfgang, 259,974, Cl. D3-71.000.
Nagao, Toshiaki: *See—*
Ohhasi, Yasuo; Ishikawa, Minoru; Nagata, Kunio; and Nagao, Toshiaki, 260,004, Cl. D10-50.000.
Nagase, Junji: *See—*
Saito, Retsuo; and Nagase, Junji, 260,024, Cl. D21-210.000.
Nagata, Kunio: *See—*
Ohhasi, Yasuo; Ishikawa, Minoru; Nagata, Kunio; and Nagao, Toshiaki, 260,004, Cl. D10-50.000.
Neavin, William T. Fishing lure. 260,030, 7-28-81, Cl. D22-28.000.
Office, Gerald S., Jr., to Ponderosa System, Inc. Restaurant building. 260,037, 7-28-81, Cl. D25-17.000.
Ohhasi, Yasuo; Ishikawa, Minoru; Nagata, Kunio; and Nagao, Toshiaki, to Omron Tateisi Electronics Co. Temperature controller. 260,004, 7-28-81, Cl. D10-50.000.
Omron Tateisi Electronics Co.: *See—*
Ohhasi, Yasuo; Ishikawa, Minoru; Nagata, Kunio; and Nagao, Toshiaki, 260,004, Cl. D10-50.000.
Oneida Ltd.: *See—*
Manderfield, Ellen B., 259,987, Cl. D7-137.000.
Perry, Frank R., 259,989, Cl. D7-137.000.
Richmond, Colin B., II, 259,988, Cl. D7-137.000.
Richmond, Colin B., II, 259,990, Cl. D7-137.000.
Richmond, Colin B., II, 259,991, Cl. D7-137.000.
Onoue, Yasuyoshi; and Yamamoto, Toshio, to Ricoh Company, Ltd. Electrostatic copier. 260,019, 7-28-81, Cl. D16-31.000.
Pagani, David A.; and Pook, Peter D., to Leisure Dynamics, Inc. Electronic game casing. 260,023, 7-28-81, Cl. D21-13.000.
Pearson, Darrell A., to Lord's Power Company, Inc. Solar heating panel. 260,031, 7-28-81, Cl. D23-72.000.
Perry, Frank R., to Oneida Ltd. Spoon or similar article. 259,989, 7-28-81, Cl. D7-137.000.
Peters, Theodore J.: *See—*
DuBois, Thomas H.; and Peters, Theodore J., 260,020, Cl. D19-42.000.
Plakadent International, Ltd.: *See—*
Porper, Robert P., 259,977, Cl. D4-25.000.
Ponderosa System, Inc.: *See—*
Office, Gerald S., Jr., 260,037, Cl. D25-17.000.
Pook, Peter D.: *See—*
Pagani, David A.; and Pook, Peter D., 260,023, Cl. D21-13.000.
Porper, Robert P., to Plakadent International, Ltd. Toothbrush. 259,977, 7-28-81, Cl. D4-25.000.
Porteous, Don D. Surgical instrument peel pouch. 259,997, 7-28-81, Cl. D9-306.000.
Raintree Buckle & Jewelry, Inc.: *See—*
Van Brouwer, Ryk, 259,970, Cl. D2-440.000.
Van Brouwer, Ryk, 259,971, Cl. D2-440.000.
Van Brouwer, Ryk, 259,972, Cl. D2-440.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 259,988, 7-28-81, Cl. D7-137.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 259,990, 7-28-81, Cl. D7-137.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 259,991, 7-28-81, Cl. D7-137.000.
Ricoh Company, Ltd.: *See—*
Onoue, Yasuyoshi; and Yamamoto, Toshio, 260,019, Cl. D16-31.000.
Robinson, Paul H. Pet feeding center. 260,043, 7-28-81, Cl. D30-16.000.
Roccaforte, Harry L., to Champion International Corporation. Display carton blank. 260,000, 7-28-81, Cl. D9-433.000.
Rosen, Ingvar. Guard for skate blades. 260,026, 7-28-81, Cl. D21-225.000.
Saito, Retsuo; and Nagase, Junji, to Kabushiki Kaisha Tokiwa Seisakusho. Serving machine for use in practicing volleyball. 260,024, 7-28-81, Cl. D21-210.000.
Salcedo, Joseph T., to Unican Security Systems, Ltd. Key blank. 259,994, 7-28-81, Cl. D8-348.000.
Sandfield, Max M. Ruler. 260,005, 7-28-81, Cl. D10-71.000.
Schildge, Adam T., Jr. Cable stay building. 260,036, 7-28-81, Cl. D25-1.000.
Schneider, Louis; Muth, Hans A.; and Kloth, Wolfgang, to Bayerische Motoren Werke Aktiengesellschaft. Luggage bag. 259,974, 7-28-81, Cl. D3-71.000.
SCM Corporation: *See—*
LaBarbera, Angelo M., 259,975, Cl. D3-72.000.
Seelig, Barry G., to Colgate-Palmolive Company. Toothbrush. 259,976, 7-28-81, Cl. D4-25.000.
Sheill, David D., to Kelsey-Hayes Company. Disc brake pad yoke. 260,014, 7-28-81, Cl. D12-180.000.
Sheill, David D., to Kelsey-Hayes Company. Disc brake pad yoke. 260,015, 7-28-81, Cl. D12-180.000.
Sheiman, Julius: *See—*
Sheiman, Samuel R.; and Sheiman, Julius, 259,996, Cl. D8-375.000.
Sheiman, Samuel R.; and Sheiman, Julius, to Crest Lock Company, Inc. Luggage roller. 259,996, 7-28-81, Cl. D8-375.000.
Shemtov, Sami. Multi-compartmental condiment shaker. 259,986, 7-28-81, Cl. D7-57.000.
Syme, Duncan C., to Vermont Castings, Inc. Wood burning stove. 260,032, 7-28-81, Cl. D23-97.000.
Syme, Duncan C., to Vermont Castings, Inc. Front for a wood burning stove. 260,033, 7-28-81, Cl. D23-128.000.
Syme, Duncan C., to Vermont Castings, Inc. Door for a wood burning stove. 260,034, 7-28-81, Cl. D23-128.000.
Thomas, Wesley L. Telephone. 260,016, 7-28-81, Cl. D14-53.000.
Thomas, Wesley L. Telephone. 260,017, 7-28-81, Cl. D14-53.000.
Thomas, Wesley L. Telephone. 260,018, 7-28-81, Cl. D14-53.000.
Unican Security Systems, Ltd.: *See—*
Salcedo, Joseph T., 259,994, Cl. D8-348.000.
Uniroyal, Inc.: *See—*
Candiliotis, Gerassimos C., 260,012, Cl. D12-147.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 259,970, 7-28-81, Cl. D2-440.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 259,971, 7-28-81, Cl. D2-440.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 259,972, 7-28-81, Cl. D2-440.000.
Vermont Castings, Inc.: *See—*
Syme, Duncan C., 260,032, Cl. D23-97.000.
Syme, Duncan C., 260,033, Cl. D23-128.000.
Syme, Duncan C., 260,034, Cl. D23-128.000.
Walasek, Stanley. Ski goggle case. 259,973, 7-28-81, Cl. D3-34.000.
Waterman, S.A.: *See—*
Carre, Alain, 260,021, Cl. D19-49.000.
Wiley, W. Don. Building. 260,038, 7-28-81, Cl. D25-24.000.
Wilkerson, Harold E., to General Electric Company. Shipping tray for dynamoelectric machines. 259,998, 7-28-81, Cl. D9-424.000.
Wilkerson, Harold E., to General Electric Company. Shipping tray for dynamoelectric machines. 259,999, 7-28-81, Cl. D9-424.000.
Williams, Neil E. Trailer. 260,011, 7-28-81, Cl. D12-102.000.
Wirkkala, Veli T., to A. Ahlstrom Osakeyhtio. Goblet or similar article. 259,984, 7-28-81, Cl. D7-13.000.
Wistrand, John, to Clairol Incorporated. Personal security alarm. 260,008, 7-28-81, Cl. D10-106.000.
Woo, Hon K. Combined scale and tape measure. 260,006, 7-28-81, Cl. D10-88.000.
Yamamoto, Toshio: *See—*
Onoue, Yasuyoshi; and Yamamoto, Toshio, 260,019, Cl. D16-31.000.
Zaro, Marvin, to Advertising Displays Company. Multiposition peghook bracket. 259,995, 7-28-81, Cl. D8-354.000.
Zieselman, Zelda. Sculpture. 260,009, 7-28-81, Cl. D11-131.000.

LIST OF PLANT PATENTEES

Williams, Ernest D. Miniature rose plant. 4,754, 7-28-81, Cl. 7.000.

Williams, Ernest D. Miniature rose plant. 4,755, 7-28-81, Cl. 7.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 28, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

88	4,280,227
104	4,280,228
221	4,280,229
408	4,280,230

CLASS 3

1.91	4,280,231
	4,280,233
13	4,280,232

CLASS 4

540	4,280,234

CLASS 5

458	4,280,235

CLASS 6

2 R	4,280,236

CLASS 8

116 P	4,280,812
404	4,280,813
588	4,280,814

CLASS 9

8 R	4,280,237
	4,280,238
11 A	4,280,239
310 A	4,280,240

CLASS 11

1 R	4,280,241

CLASS 12

12.4	4,280,242

CLASS 14

71.1	4,280,243

CLASS 15

97 R	4,280,244
326	4,280,245

CLASS 16

35 D	4,280,246
112	4,280,247

CLASS 17

1 B	4,280,248

CLASS 19

98	4,280,249
	4,280,250
105	4,280,251
255	4,280,252
296	4,280,253

CLASS 23

230 B	4,280,815
	4,280,816

CLASS 24

95	4,280,255
155 BR	4,280,256
206 R	4,280,257
257	4,280,258
336	4,280,254

CLASS 28

160	4,280,259
255	4,280,260
271	4,280,261

CLASS 29

116 AD	4,280,262
132	4,280,263
159.2	4,280,264
229	4,280,265
241	4,280,266
426.3	4,280,267
446	4,280,268
526 R	4,280,269
570	4,280,270
571	4,280,271
	4,280,272
577 R	4,280,273
726	4,280,274
732	4,280,275

CLASS 30

144	4,280,276

CLASS 33

23 D	4,280,277
178 R	4,280,278
180 R	4,280,279
203.12	4,280,280
264	4,280,281
427	4,280,282

CLASS 34

10	4,280,283
60	4,280,284

CLASS 36

118	4,280,286
136	4,280,287

CLASS 37

54	4,280,288
63	4,280,289

CLASS 38

31	4,280,290

CLASS 40

495	4,280,291
538	4,280,292
587	4,280,293
606	4,280,294

CLASS 43

19.2	4,280,295
44.81	4,280,296

CLASS 44

1 R	4,280,817
56	4,280,818
64	4,280,819

CLASS 46

41	4,280,297
78	4,280,298
179	4,280,299
204	4,280,300

CLASS 48

214 A	4,280,820

CLASS 51

5 R	4,280,301
7	4,280,302
163.1	4,280,303
298	4,280,821
308	4,280,822
315	4,280,304

CLASS 52

58	4,280,305
63	4,280,306
90	4,280,307
98	4,280,308
212	4,280,309
646	4,280,310
748	4,280,311
749	4,280,312

CLASS 53

175	4,280,313
241	4,280,314
473	4,280,315

CLASS 54

8	4,280,316

CLASS 55

15	4,280,823
26	4,280,824
203	4,280,825
302	4,280,826

CLASS 56

15.6	4,280,317
221	4,280,318
255	4,280,319
341	4,280,320

CLASS 57

81	4,280,321
	4,280,322

CLASS 60

39.14 R	4,280,323
261	4,280,324
370	4,280,325
547 R	4,280,326
641 A	4,280,328
641 AC	4,280,327
754	4,280,329

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3	4,280,330
148	4,280,331
156	4,280,332
259.1	4,280,333
277	4,280,334
332	4,280,335
457	4,280,336
470	4,280,337

CLASS 64

2 R	4,280,338
9 R	4,280,339
21	4,280,340
23	4,280,341

CLASS 65

11 W	4,280,827
106	4,280,828
158	4,280,829

CLASS 66

177	4,280,342

CLASS 68

158	4,280,343
213	4,280,344

CLASS 69

32	4,280,345

CLASS 70

165	4,280,346
	4,280,347
166	4,280,348
358	4,280,349

CLASS 71

25	4,280,830
92	4,280,831
94	4,280,832
100	4,280,833
103	4,280,834
120	4,280,835

CLASS 72

7	4,280,350
21	4,280,351
186	4,280,352
273.5	Re.30,688
345	4,280,353

CLASS 73

1 DV	4,280,354
5	4,280,355
40.5 R	4,280,356
104	4,280,357
115	4,280,358
123	4,280,359
198	4,280,360
356	4,280,361
709	4,280,362
768	4,280,363
818	4,280,364
861.25	4,280,365

CLASS 74

5.7	4,280,366
42	4,280,367
61	4,280,368
191	4,280,369
339	4,280,370
480 B	4,280,371
552	4,280,372
625	4,280,373
695	4,280,374
711	4,280,375
788	4,280,376
813 R	4,280,377

CLASS 75

12	4,280,836
43	4,280,840
54	4,280,837
60	4,280,838
82	4,280,839
203	4,280,841

CLASS 76

83	4,280,378

CLASS 81

62	4,280,379
470	4,280,380

CLASS 83

86	4,280,381
106	4,280,382
140	4,280,383
234	4,280,384
404.3	4,280,385
471.2	Re.30,689
500	4,280,386

CLASS 84

1.01	4,280,387
1.24	4,280,388
212	4,280,389

CLASS 89

33 SF	4,280,392
36 H	4,280,393
37 A	4,280,394

CLASS 91

47	4,280,395
320	4,280,396
452	4,280,397

CLASS 92

29	4,280,398

CLASS 98

42 A	4,280,399
115 LH	4,280,400

CLASS 99

295	4,280,401
355	4,280,402

CLASS 100

43	4,280,403

CLASS 101

93.03	4,280,404
127.1	4,280,405
177	4,280,406

CLASS 102

210	4,280,410
320	4,280,407
364	4,280,409
501	4,280,408

CLASS 104

112	4,280,411
281	4,280,412

CLASS 105

150	4,280,413

CLASS 106

35	4,280,842
48	4,280,843
56	4,280,844
62	4,280,845
73.2	4,280,846
	4,280,850
89	4,280,847
90	4,280,848
300	4,280,849

CLASS 109

49.5	4,280,414

CLASS 110

224	4,280,415
254	4,280,416
346	4,280,417
347	4,280,418

CLASS 111

80	4,280,419

CLASS 112

103	4,280,420
147	4,280,421
	4,280,422
158 E	4,280,423
	4,280,424
272	4,280,425

CLASS 113

116 D	4,280,426
121 C	4,280,427

CLASS 114

39	4,280,428
45	4,280,429
51	4,280,430
105	4,280,431
109	4,280,432
140	4,280,433
174	4,280,434
219	4,280,435
222	4,280,436
	4,280,437
	4,280,438
	4,280,439
230	4,280,440

CLASS 116

219	4,280,441

CLASS 118

52	4,280,442
60	4,280,443
504	4,280,444

CLASS 119

14.02	4,280,445
14.49	4,280,446
28	4,280,447
155	4,280,448

CLASS 122

4 R	4,280,449
17	4,280,450

CLASS 123

90.6	4,280,451
179 BG	4,280,452
195 A	4,280,454
195 R	4,280,453
196 M	4,280,455
196 R	4,280,456
198 A	4,280,458
198 R	4,280,457
307	4,280,459
382	4,280,460
418	4,280,461
437	4,280,462
445	4,280,463
447	4,280,464
494	4,280,465
520	4,280,466
536	4,280,467
546	4,280,468
568	4,280,469
569	4,280,470
571	4,280,471

CLASS 125

13 R	4,280,472

CLASS 126

120	4,280,473
121	4,280,474
164	4,280,475
286	4,280,476
416	4,280,477
420	4,280,478
426	4,280,479
429	4,280,480
	4,280,481
430	4,280,482
433	4,280,483
450	4,280,484

CLASS 127

33	4,280,851

CLASS 128

24 R	4,280,485
25 B	4,280,486
33	4,280,487
80 H	4,280,488
	4,280,489
88	4,280,490
201.24	4,280,491
207.15	4,280,492
207.18	4,280,493
213 R	4,280,494
214 E	4,280,495
214 R	4,280,496
272	4,280,497
283	4,280,498
303.1	4,280,499
348	4,280,500
349 B	4,280,501
419 P	4,280,503
419 PG	4,280,502
420 A	4,280,504
635	4,280,505
690	4,280,506
696	4,280,507
736	4,280,508
766	4,280,509
784	4,280,510
	4,280,511
785	4,280,512
	4,280,513
786	4,280,514

CLASS 131

84 C	4,280,516
276	4,280,515

CLASS 132

9	4,280,517
73.5	4,280,519
93	4,280,518

CLASS 134

8	4,280,852
60	4,280,520

CLASS 135

4 R	4,280,521

CLASS 136

246	4,280,853
249	4,281,208

CLASS 137

72	4,280,522
74	4,280,523
268	4,280,524
296	4,280,525
315	4,280,526
343	4,280,527
408	4,280,528
493.3	4,280,529
624.11	4,280,530
	4,280,531
882	4,280,532

CLASS 138

30	4,280,533
109	4,280,534
112	4,280,535
149	4,280,536

CLASS 139

436	4,280,537

CLASS 141

73	4,280,538

CLASS 144

2 Z	4,280,539
193 C	4,280,540
208 E	4,280,541
230	4,280,542

CLASS 148

1.5	4,280,854
	4,280,855
111	4,280,856
156	4,280,857
175	4,280,858

CLASS 152

209 R	4,280,543
221	4,280,544
222	4,280,545
330 RF	4,280,546
354 R	4,280,547

CLASS 156

73.5	4,280,859
167	4,280,860
382	4,280,861
384	4,280,862
387	4,280,863
500	4,280,864
538	4,280,865
568	4,280,866

CLASS 159

47 R	4,280,867

CLASS 160

383	4,280,548

CLASS 162

28	4,280,868
252	4,280,869
336	4,280,870

CLASS 164

113 4,280,549
252 4,280,550
287 4,280,551
448 4,280,552

CLASS 165

1 4,280,553
11 R 4,280,554
47 4,280,555
76 4,280,556

CLASS 166

177 4,280,557
191 Re.30,690
245 4,280,558
303 4,280,559
305 R 4,280,560
332 4,280,561

CLASS 169

39 4,280,562

CLASS 172

126 4,280,563
151 4,280,564
548 4,280,565
604 4,280,566

CLASS 173

129 4,280,567

CLASS 174

14 R 4,281,209
23 C 4,281,210
36 4,281,211
4,281,212
68 B 4,281,213
138 F 4,281,214

CLASS 175

4 4,280,568
26 4,280,569
92 4,280,570
337 4,280,571
417 4,280,572
418 4,280,573

CLASS 176

38 4,280,871
4,280,872
65 4,280,873
78 4,280,874
87 4,280,875

CLASS 177

41 4,280,574
123 4,280,575
126 4,280,576
179 4,280,577

CLASS 178

22.08 4,281,215
4,281,216

CLASS 179

1 GN 4,281,217
1 SC 4,281,218
18 FA 4,281,219
90 AD 4,281,220
111 E 4,281,222
111 R 4,281,221
115 R 4,281,223
146 R 4,281,224
175.3 R Re.30,692

CLASS 180

6.44 4,280,579
6.5 4,280,578
169 4,280,580
207 4,280,581
219 4,280,582
250 4,280,583
268 4,280,584

CLASS 181

147 4,280,585
150 4,280,586
213 4,280,587
240 4,280,588

CLASS 182

2 4,280,589
214 4,280,590

CLASS 184

17 4,280,591

CLASS 187

9 E 4,280,592
12 4,280,593

CLASS 188

1 A 4,280,594
31 4,280,595
52 4,280,596
218 XL 4,280,597
4,280,598

310 4,280,599
312 4,280,600
316 4,280,601
322 4,280,602
343 4,280,603

CLASS 192

0.08 4,280,604
8 R 4,280,605
56 C 4,280,606
98 4,280,607
113 B 4,280,608
4,280,609
132 4,280,610

CLASS 198

347 4,280,611
379 4,280,612
406 4,280,613
425 4,280,614
470 4,280,615
499 4,280,616
699 4,280,617
782 4,280,618
823 4,280,619
825 4,280,620

CLASS 200

44 4,281,226
50 AA 4,281,227
51 R 4,281,228
52 R 4,281,229
61.58 R 4,281,230
144 B 4,281,231
315 4,281,232

CLASS 201

9 4,280,876

CLASS 202

91 4,280,877
93 4,280,878
100 4,280,879

CLASS 203

23 4,280,880
51 4,280,881

CLASS 204

15 4,280,882
98 4,280,883
109 4,280,884
129 4,280,885
149 4,280,886
150 4,280,887
159.15 4,280,888
195 F 4,280,889
195 S 4,280,890
243 R 4,280,891

CLASS 206

534 4,280,621
592 4,280,622

CLASS 208

8 R 4,280,892
10 4,280,893
15 4,280,894
113 4,280,895
4,280,896
4,280,897
119 4,280,898
139 4,280,899

CLASS 209

3.1 4,280,623
34 4,280,900
154 4,280,901
211 4,280,902
469 4,280,903
524 4,280,624
582 4,280,625
658 4,280,626

CLASS 210

198.2 4,280,905
282 4,280,906
408 4,280,907
446 4,280,908
490 4,280,909
614 4,280,910
629 4,280,911
662 4,280,912
669 4,280,913
676 4,280,904
743 4,280,914

CLASS 212

198 4,280,627
266 4,280,628

CLASS 215

1 C 4,280,629
100 A 4,280,630
204 4,280,631
331 4,280,632

CLASS 219

10.43 4,281,234
121 ED 4,281,235
121 LC 4,281,236
511 4,281,237
535 4,281,238

CLASS 220

241 4,280,633
270 4,280,634
306 4,280,635
307 4,280,636

CLASS 222

39 4,280,637
180 4,280,638
217 4,280,639
561 4,280,640

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	4,280,328		4,281,174		4,281,092		4,280,904		4,280,903		4,281,411
	4,280,354		4,281,183		4,281,104		4,280,930		4,281,370	26 :	4,280,230
	4,280,401		4,281,185		4,281,106		4,280,931	22 :	4,280,237		4,280,231
	4,280,402		4,281,201		4,281,193		4,280,976		4,280,362		4,280,310
	4,280,404		4,281,215	11 :	4,280,912		4,281,033		4,280,630		4,280,335
	4,280,428		4,281,217	12 :	4,280,227		4,281,034		4,280,805		4,280,338
	4,280,430		4,281,235		4,280,344		4,281,090		4,280,812		4,280,348
	4,280,432		4,281,236		4,280,429		4,281,237		4,280,895		4,280,369
	4,280,440		4,281,247		4,280,436		4,281,256		4,280,896		4,280,372
	4,280,468		4,281,258		4,280,437		4,281,300		4,280,983		4,280,375
	4,280,478		4,281,283		4,280,438		4,281,308		4,280,999		4,280,431
	4,280,483		4,281,319		4,280,439		4,281,309	23 :	4,280,556		4,280,442
	4,280,488		4,281,326		4,280,481		4,281,311		4,280,712		4,280,456
	4,280,497		4,281,327		4,280,588		4,281,379	24 :	4,280,386		4,280,463
	4,280,506		4,281,328		4,280,590	18 :	4,280,228		4,280,409		4,280,466
	4,280,518		4,281,330		4,280,666		4,280,346		4,280,586		4,280,475
	4,280,519		4,281,342		4,280,667		4,280,347		4,280,686		4,280,477
	4,280,530		4,281,346		4,280,674		4,280,473		4,280,776		4,280,493
	4,280,533		4,281,352		4,280,675		4,280,596		4,280,822		4,280,495
	4,280,538		4,281,365		4,280,770		4,280,609		4,280,888		4,280,592
	4,280,557		4,281,367		4,280,860		4,280,659		4,281,246		4,280,608
	4,280,558		4,281,391		4,280,861		4,280,748		4,281,253		4,280,673
	4,280,635	08 :	4,280,311		4,281,047		4,280,815		4,281,269		4,280,683
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